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ADDRESSES AND ORIGINAL ARTICLES

A STUDY OF PNEUMOCOCCAL PNEUMONIA

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ASSISTANT PATHOLOGIST TO THE MIDDLESEX HOSPITAL

With the support of
THE ROYAL COLLEGE OF PHYSICIANS OF LONDON

I*

This paper is based on observations made on 184 patients suffering from pneumonia and treated at the Hammersmith Hospital (London County Council) between February, 1932, and April, 1933. They were investigated from the clinical, radiological, and laboratory aspects. In addition, the records of the Middlesex and Royal Free Hospitals over a period of ten years have been examined.

The Mortality of Pneumonia

In 1907 the first meeting of the newly formed section of medicine of the Royal Society of Medicine [1] was devoted to a discussion on pneumonia. Statistics were obtained from ten of the leading London hospitals for the years 1897–1906 inclusive, and the 6735 case-records available gave a mortality of 23 per cent. Cowan and Harrington [2] analysed the records of the Glasgow Royal Infirmary over a similar period (1920–29) and found a mortality of 21·5 per cent. in 1415 cases; it fluctuated from year to year between 16·2 and 27·3 per cent. Armstrong [3] studied 706 cases admitted to St. Bartholomew's Hospital during the years 1925–29 and reported a mortality of 16·6 per cent. A more recent survey from Birmingham by Joules [4] of 496 cases of "primary pneumonia" showed that 25·6 per cent. were fatal.

Finally the records of the Middlesex and the Royal Free Hospitals have been analysed for the period 1922–31, and if children below ten years of age are excluded, the mortality is 19 per cent. for 859 cases.

In the United States pneumonia seems to be more fatal, although Cecil of New York maintains that the death-rate has been "distinctly lower since 1919." In Cecil's Bellevue Hospital series [5] of 1849 cases there was a mortality of 33·9 per cent., and other American records support the impression that the disease is relatively severe in that country.

All statistics show clearly that mortality increases with age. This was evident in the Royal Society of Medicine series of 1897–1906 and is apparent also in a series from the Middlesex and Royal Free Hospitals, 1922–31 (Table I.). In both groups there is a decided increase in mortality with age, but the series of 1922–31 show an appreciable reduction especially in the age group 20–40.

The 1922–31 series yield further information. If none but the cases which fall between ten and fifty years are included, a total of 542 is obtained, and of these 70 died—a percentage of only 13. With still further selection, limiting the survey to those between ten and forty (a total of 418 cases, with 36 deaths) the mortality is 8·6 per cent. In Joules's series, which were cases largely drawn from the "very poor," the mortality in the 10–40 age-group was 12·5 per cent.

TABLE I.—*Percentage Death-rate in relation to Age*

Period.	Cases with mortality per cent.	Age-group.					
		10–20	20–30	30–40	40–50	50–60	60
1897–1905	582 (24·3) (Roy. Soc. Med.)	5·2	14·2	34·3	39·3	46·6	68·6
1922–1931	859 (19) (Middlesex and Royal Free)	6·0	6·0	18·0	27·0	42·0	63·0

In a modern investigation the mortality figures must be correlated not only with age but also with type. Cecil, Baldwin, and Larsen [6] showed that Type I. pneumonia was most common under forty years of age. Of 1092 cases of pneumonia under forty, no less than 426 (40 per cent.) were due to Type I.; over that age out of 795 cases only 202 (25 per cent.) were due to this type. There is therefore a high incidence of Type I. infection under forty, and this is the period of better prognosis. Blake [7] made a similar study and found a still higher proportion in his cases: under thirty-nine years 80 per cent. were due to Type I., whilst over forty the incidence fell to 20 per cent.

If we are to regard Type I. pneumococcal pneumonia as being the commonest form to attack those under forty years of age, then the period of life most favourable for spontaneous recovery corresponds to the incidence of the type most amenable to serum therapy. It may therefore be difficult to determine in a serum-treated case what factor saves life. In the series here described we therefore selected the more serious cases for specific treatment (instead of alternate cases) as affording a more stringent test of the value of serum.

Type I. Pneumococcal Pneumonia

Evidence is accumulating that the three specific types of pneumococcal infection can often be recognised clinically as well as bacteriologically. Type I. conforms most closely to the classical description of pneumonia. It attacks the young and apparently healthy; it is ushered in by pain of sudden onset, vomiting, or a rigor; it shows a high and sustained fever, and it commonly ends with a crisis followed by rapid resolution.

INCIDENCE

It is important to realise the high incidence of Type I. infection. In 4310 cases reported by Cecil and Plummer [8] it was responsible for 32·1 per cent. Cole [9] in his monograph gave it an incidence of 33·3 per cent., and Park and his colleagues [10] in 1928 put the figure at 28·5 per cent. Other findings are those of Blake, [7] 32 per cent. of 606 cases; Leys [11] 32 out of 100 cases; Dible, [12] 34·4 per cent. of 766 cases; and Cruickshank [13] in Glasgow, 36·2 per cent. of 1215 cases. The Medical Research Council report [14] of the combined statistics of Aberdeen, Glasgow, Edinburgh, and London showed an incidence of 35 per cent. in 1375 cases. While individual reports suggest variation from year to year and from country to country, it is fairly well established, both from recent and past records of

*Parts II. and III. will appear in forthcoming issues of THE LANCET.

American and British workers, that Type I. accounts for some 30 per cent. of all cases of pneumonia.

During the period February, 1932, to April, 1933, we had 184 cases of lobar pneumonia under observation, and of these, 137 showed a type incidence as follows :—

Type I.	55 cases	(40·0 per cent.)
Type II.	13 ,,	(9·5 ,,)
Type III.	20 ,,	(15·0 ,,)
Group IV.	49 ,,	(36·0 ,,)

In addition there were—

Two types	12 cases.
Streptococcal	4 ,,
Untyped	31 ,,

Incidence in relation to age.—Of 1380 cases of Type I. pneumonia studied by Cecil,[8] 806 (59 per cent.) were in persons between ten and forty years of age—broadly speaking, in young adults. Of the 194 Type I. cases recorded by Blake[7] 80 per cent. were in persons below forty. In the Medical Research Council's combined statistics[14] of 485 Type I. infections, 364 of the patients were between twenty and forty, an incidence of over 70 per cent., while only 121 were between forty and sixty. Apparently it is uncommon to find Type I. pneumococcus in the pneumonia of the very young, and Cecil[8] regards it as an extremely rare infection under the age of three. Our group of 55 Type I. cases agreed in showing a preponderance of patients under forty :—

Years.	Cases.	Years.	Cases.
10–19	11	40–49	9
20–29	16	50–59	5
30–39	14	60	0

There is therefore good evidence to regard Type I. pneumonia as an infection which predominantly affects the young adult. This in its turn carries with it a good prognosis.

MORTALITY

It is necessary to have some estimate of the mortality of this form of pneumonia in the absence of special treatment, and if possible to know the expected mortality in relation to age. Since it is a form predominantly attacking the young and healthy, it would not be difficult to compile a large series with a very low mortality, and this must be borne in mind when assessing the value of any specific remedy. It has been clearly shown that Type I. pneumonia is a more dangerous disease in America than it is in England, but this conclusion has to be qualified by the fact that our compiled statistics are less extensive. The death-rate in America is given as 25–30 per cent., but even there it varies according to the class from which the different institutions draw their cases. Cecil[8] gives a mortality of 28·2 per cent. at Bellevue Hospital, Lord[15] 24·7 per cent., Blake[7] 23·2 per cent., Bullowa[16] 29 per cent., and Sutliff and Finland[17] 32·2 per cent.

Cecil, Baldwin, and Larsen[6] found the mortality of Type I. infection in relation to age to be :—

Under 20	8·4 % deaths.	40–50	21·0 % deaths.
20–30	16·0 % ,,	50–60	26·6 % ,,
30–40	17·8 % ,,	60	31·2 % ,,

The Glasgow school[13] found in a series of 1118 cases that the death-rate for Type I. pneumonia was only 10·8 per cent. Langley,[19] however, in Manchester recorded 20 deaths in 99 cases—a mortality of 20 per cent. The combined total of the Medical Research Council[14] series (301 untreated cases) showed a mortality of 15 per cent.

In our small series of 55 cases of Type I. pneumonia there were 19 cases deemed serious enough to have serum treatment, and the remaining 36 all recovered without the aid of any specific therapy. Since we know that the mortality from all types of pneumonia is lower in this country than in America, we deduce that the mortality here from Type I. pneumonia cannot on the whole be much greater than 10–15 per cent.

CLINICAL PICTURE OF UNTREATED TYPE I. PNEUMONIA

As just stated, there were 36 patients who had no treatment and they all recovered. The average age for the group was thirty: 23 terminated by crisis and 14 of these showed a normal temperature on or before the seventh day, while 21 were afebrile before or on the ninth day. Like other observers, we have found a sustained temperature with a swing of about 2° in the majority; the range was usually from 102°–104°. The younger the patient the higher the temperature. The infection, if judged by the respiratory rate, was moderately severe; for in 31 the respiratory rate was above 30 and in 16 was 40 or more. Thirty of the cases showed a pulse-rate above 120. The pulse-rate rapidly returned to normal after the crisis. In assessing any form of treatment it is imperative to know the stage of the pneumonia at which the case is first seen. In this group it was possible to ascertain the exact date of onset in 28 cases—the pneumonic onset being sudden and ushered in by such dramatic symptoms as rigor, vomiting, or sudden pain. In eight of the cases there were some atypical features and the exact day of onset somewhat doubtful.

Only 4 of this group gave a past history of chronic chest trouble; their course was far more distressing than that of others with a clear history.

Typical signs of consolidation were obtained on admission in 24 cases, atypical signs in 9, and no signs at all in 3, though these had become definite 24 hours after admission. Extension into another lobe was observed in 6 of the more serious cases. A feature common to almost all this group was the rapidity with which the signs of consolidation disappeared; for in 27 of the 36 cases no physical signs were elicited after the twenty-first day. In only 2 was there a delayed resolution. Empyema developed in 3 of the cases; this was treated by aspiration in 2 and by rib resection in the other.

Type I. pneumonia has been regarded as the pneumonia of the "healthy" young adult. It is the form which shows all the classical features of "acute lobar" pneumonia—the high sustained fever (Chart 1), the clear-cut onset, and, in a large majority, the sudden cessation of distress with a sharp crisis. Our group of 36 is in keeping in several respects, the youth of the patients (average age thirty), the infrequent past chest history, the comparatively common "early" crisis (Chart 2), and the absence of any profound or progressive toxæmia in the majority. (In an older person the response is less typical.) Favourable and unfavourable features of this type may be classed as :—

Favourable.—(1) High sustained fever. (2) Early crisis. (3) Rapid fall in pulse-rate with cessation of fever. (4) A good initial leucocytosis (20,000–30,000) and a rapid fall in white cells associated with the crisis. (5) No history of chest trouble.

Unfavourable.—(1) An irregular fever. (2) Cyanosis and profound toxæmia. (3) A persistent tachycardia. (4) A persistent high white cell count, or an initial or persistent low white cell count. (5) A persistent bacteræmia. (6) Preceding chronic chest history or existing hypertension.

Seeing that Type I. pneumonia is the form in which serum therapy has been proved useful, it is well to

bear in mind the probable benign course in a large proportion of the cases, the not infrequent early crisis and the youth of the average patient.

LABORATORY FINDINGS IN UNTREATED TYPE I. PNEUMONIA

Leucocyte count.—The average leucocyte count, taken at the height of the fever in our untreated Type I. cases, has been 22,000. The general trend has been for the count to fall to 12,000 within three days of the crisis and to 10,000 within the week. In two cases of empyema the same subsidence occurred after the crisis, but with the establishment of the empyema the rise was only to 18,000 and 10,000 respectively.

Blood culture.—In 22 untreated cases blood cultures taken on the day of admission were all negative. Owing to the favourable course of the disease the examinations were not repeated.

Agglutinins.—In our series of untreated Type I. pneumonias we have been impressed with the ease with which agglutinins are developed in the blood and their transitory nature in uncomplicated cases. The most constant finding in straightforward Type I. infections has been for agglutinins to be detectable not just before or at the crisis but about two or three days afterwards; usually they have disappeared after a fortnight. This phenomenon was observed in 14 cases out of 22. On the other hand, cases which developed complications, such as empyema, extension of consolidation, otitis media, or delay in resolution, have almost all shown a persistence of agglutinins beyond the time stated above. With the onset of a complication the agglutinins sometimes

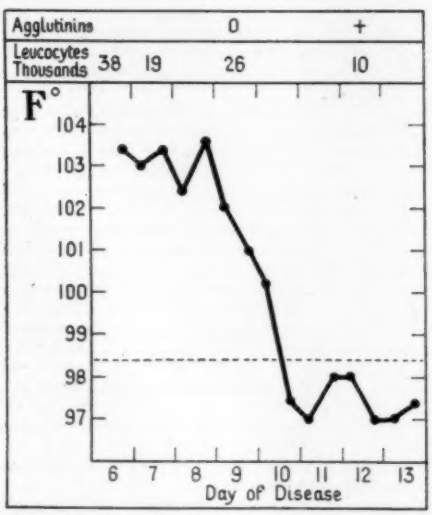

CHART 1.—Type I. pneumonia in a male aged 30. Rapid fall in white cells from 38,000 to 10,000 in seven days. Rapid resolution.

disappear, to reappear when the complication has subsided.

We deduce therefore that agglutinins are substances associated with the process of resolution; their presence, though favourable, is no index of true immunity; rather do they show that the process of resolution is going on. Persistence of agglutinins does not indicate immunity to extension of the disease, to exacerbations, or to complications; it suggests that the process of resolution is not yet over and that the patient is accordingly liable to further trouble. With the disappearance of agglutinins it may be assumed that resolution is complete and the infective process overcome.

Type I. Pneumonia Treated with Felton's Serum

American workers have assessed the value of serum through the investigation of large series and have demonstrated a diminution in mortality in Type I. pneumococcal infections. We, on the other hand, have been forced to adopt a method based on close

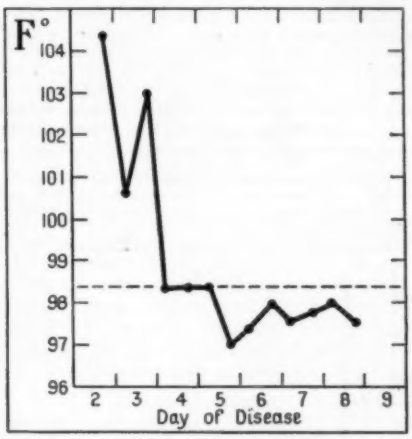

CHART 2.—Type I. pneumonia in a male aged 28. Crisis on fourth day.

personal observation of individual cases. From this point of view our series of 19 is divisible into two classes.

(i) Cases in which serum was administered within the first four days of disease—i.e., those falling within the theoretical optimum period for benefit.

(ii) Cases in which serum was administered after the fourth day—i.e., those in which the exploitation of any available measure was justified by the gravity of the illness. A positive blood culture on the fifth day or a rapidly rising pulse and respiratory rate were factors which weighed in favour of serum treatment in this group.

We base our impressions of the value of serum therapy on the relief of symptoms, the fall of temperature, the day of crisis, the speed of resolution, and the incidence of complications.

(I) CASES TREATED WITHIN THE FIRST FOUR DAYS

In the first group 16 cases were treated; of these 5 received serum on the second day, 5 on the third, and 6 on the fourth.

SERUM TREATMENT ON SECOND DAY

Table II. shows 5 cases treated on the second day, all of which recovered. Three had a crisis on the third or fourth day, while the remaining two became afebrile on the fifth. There was an undoubted amelioration in respiratory

TABLE II.—*Cases treated on the second day*

Case.	Age.	Day of crisis.	Resolution (complete).	Complications.	Units of serum.	Serum sickness.
A ..	20	4th.	15th.	Nil.	80,000	0
B ..	30	3rd.	16th.	Nil.	80,000	0
C ..	38	5th.	36th.	Nil.	120,000	+
D ..	41	4th.	16th.	Nil.	90,000	+
E ..	25	5th.	20th.	E. 15th day	100,000	0

E. = exacerbation.

distress, and it was commonly noted that after an initial dose of serum the patient slept quietly for some hours. These patients coughed and expectorated less than those

untreated, although frequently they were disturbed for a few minutes after the administration of serum in their efforts to expectorate a frothy and abundant secretion; this temporary distress was rapidly replaced by an attitude of comparative comfort. At first it was a surprise to see a pneumonic patient on the fourth day of the disease sitting up in bed, shaven and reading the morning papers. In their relative well-being they contrasted forcibly with the untreated patients who, still dyspnœic, showed little interest in their surroundings. The pulse and respiratory rate closely followed the temperature, there being an immediate fall in all three. Four out of the five cases showed a pulse of 80 or below 80 on the fourth day of disease.

Of these 5 cases 3 were poor risks, giving a long history of previous respiratory infections; one other was severely toxic with a low blood pressure, an enlarged heart, and bilateral signs of consolidation. In all 5 cases the signs observed in the lungs increased as the fever subsided, and in one case they were massive on the seventh day; but despite massive signs, resolution was complete in 4 out of

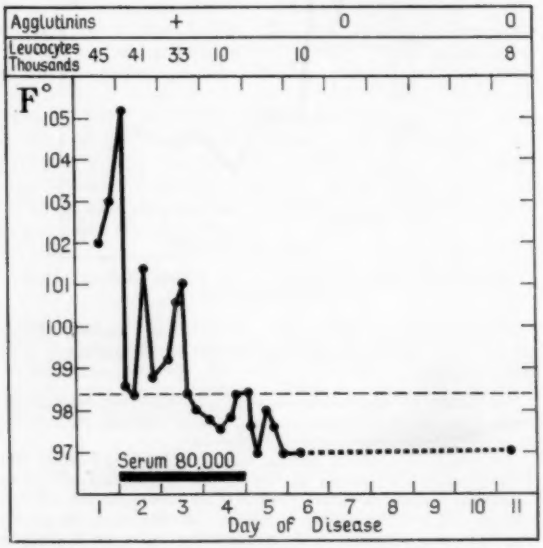

CHART 3.—Type I. pneumonia, serum-treated. Crisis on third day.

the 5 cases by the sixteenth day. None of this group developed an empyema.

Chart 3 shows the effect of serum therapy on one of this group, in whom the blood culture was positive on admission. This patient was a chronic bronchitic and severely ill.

Leucocyte counts.—A noticeable feature in these early serum-treated cases was the speed with which the high initial count returned to normal. After the crisis, the count fell within 24 hours from 33,000 to 10,000, from 25,000 to 10,000, and from 18,000 to 9000. Continuous observations on the serum-treated cases showed that in the period of delayed serum sickness, 7, 8, and 9 days after serum, when joint pains and some fever were present, there was a rise in leucocytes often as high as 17,000–20,000. In a serum-treated case this fact should be borne in mind when using the leucocyte count as evidence for the existence of an empyema.

Blood culture.—Of the 5 cases 1 had a positive blood culture on admission. The course of this case was the most favourable of all our serum cases. There was a crisis within 24 hours of giving serum.

Agglutinins.—Felton's serum contains specific Types I. and II. agglutinins, as well as specific protective substances. In interpreting results it is therefore necessary to consider the agglutinins that have been passively introduced, as well as those that are produced actively by the patient. A dose of 10 c.cm. (20,000 units or more of Felton's serum) introduces a theoretical sufficiency of Type I. agglutinins for detection in the peripheral blood shortly afterwards; Type II., on the other hand, requires the injection of 20 c.cm. or more.

We have been unable to observe any rapid "absorption" or "neutralisation" of homologous agglutinin antibody when such is injected in the form of Felton's serum; the homologous agglutinin has been easily detectable within a few hours of giving the serum and, as far as can be judged, at least as long as the heterologous agglutinin. Nor have we found any evidence that the agglutinin content of the patient's serum is any guide as to the sufficiency of the serum administered. Sabin[20] and others have claimed that not only does the presence of homologous agglutinin indicate that sufficient serum has been given, but also that the disappearance of homologous agglutinin during serum therapy (as contrasted with the persistence of the heterologous agglutinin) is sufficient evidence for making a type-specific diagnosis as well as for indicating that more serum is required. With these views we do not agree.

SERUM TREATMENT ON THE THIRD DAY

The 5 cases treated on the third day of the disease are summarised in Table III.; 4 survived and 1 died. An early crisis was obtained in 2 (on the fourth day); one of these (J) died later of meningitis. Another was afebrile on the fifth day, another on the seventh, whilst the last (I) was not afebrile until the ninth

TABLE III.—*Serum given on third day*

Case.	Age.	Crisis.	Resolution.	Complications.	Units dosage.	Serum sickness.
F ..	28	4th.	27th.	Nil.	70,000	+
G ..	20	5th.	37th.	Sore-throat.	130,000	0
H ..	45	7th.	55th.	Extension of consolidation.	120,000	+
I ..	27	9th.	22nd.	Nil.	120,000	+
J ..	28	4th.	Nil.	Meningitis (death).	140,000 50,000	0

day, and then only for 24 hours, after which his temperature again rose with serum sickness. While all five experienced symptomatic improvement, the response was not so definite as in the cases treated on the second day, although in three of the cases the pulse-rate was 80 or under on the fifth day.

One patient, a poor risk, gave a history of two previous attacks of pneumonia; he had an emphysematous chest, was ill-nourished and delirious, and had a positive blood culture, as well as a low blood pressure (90/60). In his case there was no dramatic fall in temperature following treatment, but the amelioration of symptoms, the rapid recovery, and the immediate fall in white cells turned a gloomy into a bright prognosis, and we are bound to attribute this change to the administration of serum.

Leucocyte counts.—As in cases treated on the second day, there was, where a favourable result was obtained, a quick fall in the leucocyte count. Though the immediate fall was not as rapid as in the second-day series, there was nevertheless a speeding-up of the fall as compared with the untreated cases, the average count eight days after the crisis being 7000. Observations on three cases at the most intense phase of delayed serum sickness reaction showed an average count of 22,000.

Blood culture.—In this group of five cases there was one with a positive blood culture.

Agglutinins.—As in cases treated earlier, agglutinins were detectable within a few hours of the introduction of Felton's serum. These passive agglutinins, in favourable cases, merged into those actively produced by the patient and were present throughout the whole period of resolution.

SERUM TREATMENT ON THE FOURTH DAY

Of 6 in this category, 2 experienced a crisis on the fifth day, 2 were febrile until the ninth day, and in the remaining 2 fever persisted and merged into the fever of complications (Table IV.).

Definitely favourable responses were obtained only in young people—20 and 24 years of age—in whom an early crisis might be expected. Of the 4 older subjects, all were obviously improved symptomatically as the result of serum. There was, however, no immediate effect on the temperature, and in 2 the fever of the pneumonic process merged into that caused by an empyema. All 4, from the clinical

aspect, appeared in urgent need of medical help, and we consider that serum contributed to their recovery.

From the 6 cases we concluded that 2 reacted specifically to treatment with serum, while the other 4, although they showed no immediate effect, appeared to benefit. Thus

TABLE IV.—*Serum given on fourth day*

Case.	Age.	Crisis.	Resolution.	Complications.	Units dosage.	Serum sickness.
K ..	20	5th.	10th.	Nil.	60,000	0
L ..	24	5th.	12th.	Nil.	60,000	0
M ..	35	—	—	Empyema.	90,000	0
N ..	41	9th.	—	Empyema.	130,000	0
O ..	45	—	29th.	Hip abscess.	120,000	+
P ..	51	9th.	21st.	Nil.	60,000	0

there was less respiratory distress, less coughing, and little, if any, expectoration. The incidence of empyema was noticeably high, and it may well be that the lessening of respiratory embarrassment encourages the retention of inflammatory products within the lung and so facilitates formation of an empyema.

Leucocyte count.—In the two favourable cases the leucocyte counts showed the usual rapid fall soon after the crisis. In the other cases, the original disease was so merged in the subsequent purulent complications that no fall in leucocytes was observable as a result of the serum therapy.

Blood culture.—One patient in this group had a positive blood culture on admission. He later developed an empyema. The clinical course was no more unfavourable than other cases.

Agglutinins.—In principle the same results were observed as previously described. One patient had no agglutinins at any phase, but the other 5 all had them in the peripheral blood a few hours after giving serum; they were easily detectable during the period of resolution, and, in cases with complications, so long as these were present. It is interesting to note that in one of the empyema cases the agglutinins disappeared at the end of what we had come to regard as the normal period of resolution, but reappeared with the onset of empyema. It is clear that agglutinins are no indication that a given case will be free from complications. Recovery from a complication appears to excite agglutinin formation in the same way as recovery from a straightforward pneumonia.

(II) CASES TREATED LATE IN THE DISEASE

Of three patients in this group (Table V.) one died. All three were given serum as a forlorn hope on the sixth day, because their condition was regarded as desperate. Yet even in this series two

TABLE V.—*Serum given late in the Illness*

Case.	Age.	Crisis.	Resolution.	Complications.	Units dosage.	Serum sickness.
Q ..	28	8th.	15th.	Nil.	60,000	0
R ..	36	7th.	16th.	Nil.	70,000	0
S ..	48	—	—	Bilateral empyema (died).	120,000	0

showed such rapid symptomatic improvement that we could only attribute the change to serum; one of these had a positive blood culture (sixth day), but the temperature and pulse were normal within 24 hours of giving the serum. The fatal case showed immediate symptomatic improvement, but the patient died about ten days later and two small loculated basal empyemata were found at autopsy.

DISCUSSION

The cases selected for serum treatment were those in which symptoms were severe or the risk poor. Two only ended fatally—one from meningitis after an apparent recovery, and the other from a bilateral deep-seated empyema. Both of these had shown an initial response to serum.

In this group of 19 cases, which includes 3 treated on the sixth day, a positive blood culture was found in 4, though in the 2 patients that died the blood was sterile. It speaks favourably for the potency of serum that the 4 showing a positive blood culture recovered, and of these 1 was positive as late as the sixth day.

The effect of the serum on the symptoms was undoubted. In the early case it was immediate and the febrile period was obviously shortened. The patients were made far more comfortable and their respiratory embarrassment was greatly allayed, although the signs of consolidation remained or in some cases actually progressed, even though the crisis had occurred and the patient was afebrile.

American publications have shown the efficacy of serum in reducing the mortality of Type I. pneumonia. To Cecil, whose statistics are still the best and largest, the chief credit is due for this clinical demonstration. Of 103 cases treated within the first three days of illness he lost only 12, a mortality of 11 per cent.[8] Up to date he has treated 239 cases of Type I. with a mortality of 20 per cent., compared with a control mortality of 31 per cent. Cruickshank[13] has collected the compiled statistics of serum-treated Type I. cases in U.S.A. and this country as follows:—

	Cases.	Deaths.	Mortality.
Treated	547	94	17·3 per cent.
Untreated ..	477	148	31·0 ,,

The Medical Research Council report[14] gives the following figures from the four British centres:—

	Cases.	Deaths.	Mortality.
Treated	184	18	9·7 per cent.
Controls	301	45	14·7 ,,

It is very necessary to obtain a large series of treated cases to establish the value of serum therapy. This has been done in America, but the figures are not applicable to this country since, as we have said, there is reason to believe that Type I. pneumococcal pneumonia is less fatal here. Theoretically, serum therapy should show not only a reduction in mortality but also a shortening of illness and alleviation of distressing symptoms.

Our cases showed definite symptomatic benefit, and although this was more obvious where the serum was given within the first three days, we concluded that some effect was obtained when it was given later. If antipneumococcal serum is specific we think it should not be withheld from patients desperately ill in the sixth or seventh days. Although at this late stage its effects can only be judged by clinical impression, such judgment is not without value. There must be many cases where the exhibition of serum even late in the disease might prolong life for an extra day and thus allow a crisis to be established. From our limited experience we would regard any case of Type I. pneumonia as being in need of serum if the condition was severe and the prognosis uncertain. Moreover, since serum may "abort" the disease when given early, its use should always be considered in cases seen during the first three days; if it shortens the febrile period it will make extension or relapse less likely.

SERUM REACTIONS

Some immediate reaction was observed in all the 19 cases to which serum was administered. The pulse became faster, the patient perspired profusely, and general distress was greater. Only once did this immediate reaction reach alarming proportions, this

in a man of 45. A delayed or thermic reaction occurring within a few hours has been mentioned by Leys[11] and one of his patients died of "hyperpyrexia"; but none of our cases showed this reaction.

Serum sickness developed in 6 cases, between the ninth and sixteenth days. Usually such a reaction is shown by joint pains, joint effusions, and a rise in temperature; occasionally there is urticaria. We were impressed by the severity and duration of this disturbance, for in many of the patients it caused manifest discomfort for three or more days. The temperature rose to 100° or more. The white cells increased to 15,000–20,000, and the patient complained of severe pains, which often resulted in loss of sleep and so delayed convalescence. There was little evidence of joint effusion in our cases; indeed, little could be found wrong in the joints except that movement was acutely painful. It was observed that the white cell count often rose before the onset of symptoms, while the fever usually returned pari passu with joint pains.

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THE RESULTS OF FIFTY CASES TREATED BY PSYCHOTHERAPY

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THIS paper summarises results obtained in the treatment of fifty patients at the Maudsley Hospital during 1933. Their ages ranged from 17 to 48, and twelve of them were women; they were referred to me from the out-patient department by other members of the staff,* and were seen for half an hour at a time. The maximum number of interviews was three per week; the minimum cannot be fixed, but some of the patients were seen only once every two or three weeks.

Unfortunately there is no objective standard by which a "cure" can be measured. Ability to return to work is one criterion accepted by the Maudsley Hospital for the use of the term "recovered," but as many of my patients remained at work during their treatment, it cannot be applied here. The cases have therefore been classed as Improved and Unimproved,† the former group being subdivided as follows:

Slight.—This merely implies that the patient felt somewhat more comfortable than he did to begin with. His symptoms were either less intense, or attacks were somewhat less frequent.

Moderate.—The patient's symptoms showed a satisfactory diminution in intensity or frequency, but nevertheless had not disappeared.

Considerable.—Complete or almost complete disappearance of symptoms.

The terms are not satisfactory, depending as they do on a mixture of the physician's observations and the patient's own assessment of his feelings. In functional disorders, however, the patient's comfort and ability to carry on is so far linked with subjective conditions that his feelings may be allowed relatively greater weight.

The four types of treatment used may be described as follows:—

Medicine and Reassurance.—The nature of the symptoms was explained to the patient. He was told that other people had similar ones, that there was no danger (especially of insanity), and that he would recover. The medicine given depended on the conditions present; usually pot. brom. was employed, though occasionally a placebo such as mist. gent. c. sod. was prescribed. If there was any organic disorder this was treated appropriately, but not during analytic treatment. It was found inadvisable for the psychologist to act as the general medical attendant, and the patient's own doctor was enlisted to deal with such problems.

Suggestion.—Here the patient was made to lie down, and a slightly hypnoidal state was induced. Suggestions of recovery were made, both general and specific for the symptoms.

Psychological Talks.—The patient was seen once or twice a week. His history was gone into, and his symptoms reviewed and explained in the light of their apparent ætiology.

Analytic.‡—The patient was made to lie down. Free association, with or without the use of dream material, was employed. The transference was analysed. The patient was never seen less than twice a week, and usually three times. Treatment extended over some months, though never above nine and rarely longer than six. Sessions lasted half an hour.

RESULTS

Of the 50 patients 32 improved, 16 failed to do so, and 2 got worse.

Anxiety States.—The results in this group are set out in Table I.

The severe case which improved considerably was one of long standing, previously treated elsewhere, without avail, by medicine and reassurance. Of the two moderately severe cases with considerable improvement one was a woman of 35 with an acute anxiety state, who had 43 analytic sessions. In her

* As the whole question of psychotherapy is a controversial one, I would like to make it clear that once a patient was handed on to me I was allowed to use my own discretion regarding the line of treatment adopted. These methods, therefore, were not necessarily endorsed by other members of the staff.

† The results were those obtained at the time of discharge. As no "follow-up" was done, there are no reports from relatives or friends to confirm or refute them.

‡ The term "analytic" is used as opposed to psycho-analysis in the Freudian sense. The method employed differed in so far as the sessions were less frequent and shorter, and the treatment did not last nearly so long. Although a transference was established and analysed, where necessary advice and occasional reassurance was given, and a certain amount of persuasion used. I think the physician is in a position to distinguish between demands for reassurance and advice which are arising from the analytic situation, and where these demands are really appropriate and determined by a reality situation. The method corresponds largely to that of Stekel of Vienna.

case the anxiety gave way to a good deal of sexual desire, which had been absent previously. As she was a person who stood a reasonable chance of getting married, this was not unsatisfactory, though it raises the question whether such a substitution would be beneficial in all cases. The other patient was a man of 43, who improved after 11 psychological talks.

TABLE I.—*Anxiety States*

	Cases treated.	Improved: Considerably.	Improved: Moderately.	Improved: Slight.	Unimproved.
Moderate	17	2	7	5	3
Severe	7	1	—	1	5
Totals	24	3	7	6	8

Of the 8 cases which were unimproved, 5 were chronic and 3 subacute. Six of them, moreover, discharged themselves without warning from the second to the tenth session. Five patients (4 of them being among the self-dischargees) had been treated medicinally before.

TABLE II.—*Depressive Cases*

	Cases treated.	Improved: Considerably.	Improved: Moderately.	Improved: Slight.	Unimproved.
Moderate	8	2	5	—	1
Severe	3	—	—	2	1
Totals	11	2	5	2	2

Depressive Cases.—These are summarised in Table II. One patient who improved considerably was in a recurrent depression at the third spell; he was seen three times. Of the unimproved, one was a case of depression in the puerperium, which came to me at the beginning of a relapse, and the other a man who was worried and dissatisfied with his work, and who showed paranoid features.

One depressive who improved was a man who suffered from listlessness and lassitude. He worked 13 hours a day and only had one Sunday off in three as spare time. This lassitude was at first attributed to overwork, but after a month the symptoms improved with no change in the external conditions. This is of interest, since overwork is often stated to be a cause of neurotic conditions, yet here was a grossly overworked man who improved.

Obsessionals.—Of 3 patients treated, 1 improved and the other 2 were unimproved. The case which improved was a severe one and the improvement shown was considerable. The patient was a man of 60 who had been overworked in the office and had two previous attacks. He was treated with a holiday, bromide and reassurance, and improvement took place gradually over six months.

Both the unimproved cases were moderately severe. One was subacute, and the patient had to leave London after six sessions because of his employment.

The other was acute and was treated analytically at 21 sessions; the patient then discharged himself but has since returned. We had been discussing his hostile attitude towards his father, and he suddenly felt an impulse to leave; "treatment was useless." On resuming treatment we soon returned to the subject of his attitude towards his father, and he said that it again had aroused a strong impulse not to come up. He was again under treatment for a month, twice weekly, but failed to return to me after a holiday.

Hysteria.—Improved, 4; unimproved, 2. Of the former, one was a severe case of "faints" which improved considerably; and of three moderately severe cases one improved considerably and the others moderately. The patient who improved considerably had fits resembling tetany; he was seen 7 times, and reassured.

One of the moderate cases was analysed at 36 sessions, thrice weekly. She was a woman of 45 who had hysterical feelings of faintness, which were never witnessed, and which improved but did not disappear, according to the patient's account. She was an interesting case from the point of view of the importance of external and internal factors. An educated woman who had lost all her money and could trace no relations, she had supported herself for many years. When first seen she was unemployed and was living on 17*s.* a week. After a month she again obtained employment. There was no improvement in her symptoms after she returned to work. Although she was very emotional and unable to grapple with problems of a subjective and especially a "moral" nature, she never gave way under the strain of her very difficult circumstances.

One of the cases that failed to get better was a hysterical amnesia in a woman of 24 which did not improve after 48 sessions of psychological talks; the other was a case of sleep-walking and dermatitis artefacta, in which the patient attended nine times but "failed to see why she should be treated at all."

Sexual Difficulties.—A number of cases of sexual disorders were seen during the year, but apart from one patient with frigidity, none of them could attend over any length of time and no attempt was made to alter the sexual disability. In the time available it was possible, however, to do something to relieve their anxiety or depression—often by adjusting their attitude towards their own difficulties.

Four cases of homosexuality were seen in this group. One patient, a married man, had committed an offence which he was very disturbed about. A second, a strapping man, working to support his mother, considered himself "a moral degenerate," and was not unnaturally depressed in consequence. A third was very unhappy about his condition, not from the social point of view but because of his inability to lead a satisfactory sexual life along the lines he desired, and had on three occasions attempted suicide. He had never had heterosexual inclinations up to the age of 26, but then had intercourse with a woman and was potent, though deriving very little satisfaction from the act. He and the married homosexual are interesting as examples of "bisexual" men.

As these cases were never treated for their sexual difficulties they cannot be included numerically, and have been mentioned from the point of view of interest only.

The single case treated was one of frigidity in a woman of 30, who had been previously treated by reassurance and advice, but to no avail. She improved after 76 sessions of analysis, at the end of which time she was also given advice regarding technique. This advice had been given previously, but had never been accepted, so it appears reasonable to argue that the analysis had brought about the change that made it possible for her to arrange her sexual life in a way that would bring her pleasure. She also became a much quieter and less agitated person.

Schizophrenics.—Four were treated, with no improvement. One was a man of 25 with obsessional features. He suddenly left after ten sessions of an analysis which was being tried and got married (of which he had said nothing). The others were under 20. Two of them discharged themselves, and the fourth, who had gonorrhœa, and who insisted that he should be at liberty to have sexual intercourse without any measures being taken to prevent

infecting his partner, was referred back to the venereal diseases clinic as being unresponsive to psychotherapy.

Behaviour Problems.—There was one case only, that of a girl of 17 in service, who had temper tantrums. They were brought about by a family situation and the girl's mismanagement by her mother. The difficulties improved considerably with half a dozen talks.

DISCUSSION

One of the obvious difficulties of psychotherapy is the expenditure of so much time on single cases. This particularly applies when the patient has small means, or at a clinic where a comparatively large number of cases have to be treated. It becomes important, therefore, to determine the most satisfactory method of treatment, and to decide how far a given case will prove responsive. In a hospital clinic it is especially undesirable to spend much time over a case which will not respond to treatment at the expense of one which will. Similarly, unless there is very great advantage to be gained by a longer method (such as an analysis) rather than a shorter, the latter should of course be chosen.

In a paper like this, dealing with only 50 cases, it is impossible to go into detail about the kind of treatment that will prove most satisfactory in particular cases. Moreover, as the method adopted in each case depended only on my own judgment of what was required, the issue is correspondingly prejudged and the findings invalidated. However, it may be worth while to set out the results according to the different methods of treatment used (Table III.).

TABLE III.—*Methods and Results*

Method.	Cases treated.	Improved.	Av. att.*	Unimproved.	Av. att.*
Analytic	10	7	51	3	11
Psy. talks	23	12	14	11	6
Reass. and med.	15	11	7	4	4
Suggestion	2	2	12	0	0

* Av. att. = Average attendance in half-hour sessions.

The comparatively poor results of the psychological talks are to be explained as follows. These are the results of clinical work and not an experimental investigation; I had to decide what method to use, and I was only prepared to embark on an analysis where I felt the trouble would be repaid. Reassurance and medicine therefore were used in the cases that seemed likely to respond most easily, and there was a tendency to keep psychological talks for the cases which clinically appeared to be the hardest to treat.

It will be seen that just over two-thirds of those analysed improved, two-thirds of those having reassurance and medicine, and just under half of those having psychological talks. As I have just said, these were the ones which at the start probably appeared least responsive. Of 10 analysed, 4 had been previously treated unavailingly by reassurance. Out of 16 improving on reassurance and medicine 7 had been previously treated, and 4 out of those treated by psychological talks.

PROGNOSIS

Turning to prognosis, is it possible to discover any factors which will give an idea how far a particular case is suitable for treatment? With this in mind, the following points have been investigated in the cases reported.

1. *Objective factors.*—(*a*) The chronicity and severity of the neurosis. (*b*) The influence of external factors, grouped under business, domestic, and financial worries.

2. *Subjective factors.*—(*a*) The sex life of the patient and whether it is satisfactory. Also the question of conflicts centring around masturbation, since this frequently proved to be a cause of worry. (*b*) Certain rather ill-defined factors discussed below.

While actually working with patients it struck me that there were certain cases which from the beginning appeared more hopeful than others. It was very difficult to be precise about this, but, broadly speaking, the ones who were judged to have a good prognosis were those who were intelligent and coöperative, were really suffering from their symptoms, and had a certain amount of psychological insight, and those whose mental processes and outlook were not too set. The other group were those who "had an axe to grind" with their illness, who were set and self-centred.

Certain of these characteristics have been investigated in the present series to see if anything emerges.

It was found that acute cases were rather more responsive than the others, but the severity of the attack seemed to bear no relation to the response to treatment. This largely agrees with my impression, in dealing with cases, that the actual severity of the symptoms did not necessarily mean poor response to treatment; indeed, it very often seemed to increase the patient's desire for improvement. Table IV.

TABLE IV

	Domestic worries. Per cent.	Business worries. Per cent.	Financial worries. Per cent.
Improved	23	10	10
Unimproved	23	14	14

shows the relation of domestic, financial, and business worries to improvement, and the figures again agree with the clinical impression that although such troubles may worry and depress the patient, they do not enter into the structure of the remaining neurosis. The case cited under "hysteria" was an interesting example of this.

Turning to the subjective conditions, Table V. shows that of the failures over three times as many

TABLE V

	Sex life unsatisfactory. Per cent.	Masturbation. Per cent.	Worry over masturbation. Per cent.
Improved	14	20	16
Unimproved	50	32	41

had unsatisfactory sex lives—which accords with most people's clinical findings. Of those who failed to improve nearly three times as many were worried over masturbation (past or present), or the temptation to it—a matter which has to be gone into with nearly all patients. As will be seen, masturbation and worry over it do not coincide. This is in accordance with the views of Stekel[1] who remarks that "neurosis often commences when masturbation ceases."

Coming finally to the subjective characteristics above mentioned, we get the following results. For clarity the somewhat vague terms have been defined as far as possible. They are:

Discontented is where the patient was generally disgruntled about himself and his affairs, and grumbled a good deal.

Distractable means that the patient was prepared to coöperate and listen, as opposed to the type of patient who always tended to return to discussing his particular set of symptoms.

Egotistical: self-centred.

[1] Stekel, W.: Onanie und Homosexualität, Berlin, 1921, p. 18.

Somatic is where the physical side of the picture—tachycardia, pains, aches, feelings of pressure—predominated over more purely psychological symptoms.

Discontentedness was present in about half those cases which improved and half those which did not, and distractability in about a third of both. On the other hand obsessional and hypochondriacal features were present in about 10 per cent. of those who improved and twice as often in those who did not. Egotistical and somatic features were present in about one-third of those who improved, and in half those who did not. Depression was present in about two-thirds of both. From this it appears that obsessional features, hypochondriacal, egotistical, and somatic features, tend to make the prognosis worse, as they occurred approximately twice as often in those cases which failed to improve.

Finally, intelligence in relation to improvement was investigated, as was the relationship between improvement and cases discharging themselves. It was found that intelligence played no part, about two-thirds of improved and unimproved being intelligent, and that half the cases who did not improve discharged themselves, averaging nine sessions. None of those who improved discharged themselves.

COMPARISON OF RESULTS

Tabulated reports of the results of psychotherapy are difficult to find, but the results obtained are compared with the annual report of the Institute of Medical Psychology for 1933, and those in Kessel and Hyman's [2] report on the results of psycho-analytic treatment. The results of the former are :—

Cured or much improved ..	21·5 per cent.
Improved	48·8 ,, ,,
Slightly improved	20·4 ,, ,,
Not improved	9·3 ,, ,,
Total cases treated	270

These results are summarised for a report, not for a paper, and though a table of the type of patient treated is included with a follow-up over three years, no explanation of the terms employed is given. Kessel and Hyman, investigating 33 cases, used very exacting criteria of what constituted a cure by psycho-analysis without any change in environmental factors. They concluded that only five were specifically cured by this method. With modification of the environment, however, in conjunction with analysis, 17 other cases improved. These latter figures correspond roughly to the total results obtained by four different psychotherapeutic methods here.

SUMMARY

1. *Results in different types of cases.*—Fifty cases of functional nervous disorders were treated during the year. Of these 31 improved, 2 got worse, and the others remained unchanged. The results may be grouped as follows :—

Anxiety states improved ..	16 out of 24
Depressives ,, ...	9 ,, ,, 11
Obsessionals ,, ...	1 ,, ,, 3
Hysterics ,, ...	4 ,, ,, 6
Frigidity ,, ...	 1
Schizophrenics failed to improve ..	.. 4
Behaviour problem improved considerably ..	1

2. *Methods employed.*—Improvement was noted in 7 out of 10 cases treated analytically, in 12 out of 25 treated by psychological talks, in 11 out of 16 treated by reassurance and medicine, and in 2 out of 2 treated by suggestion.

3. *Prognosis.*—(*a*) The severity of the attack appeared to bear no relation to response to treatment. (*b*) Domestic, financial, and business worries seemed to play no significant part in determining the outcome of the treatment of a neurotic condition not specifically caused by one of these factors. (*c*) Sex life was unsatisfactory in 50 per cent. of cases who failed to improve, compared to 14 per cent. of those who did. Worry over masturbation was often present. (*d*) Obsessional, hypochondriacal, egotistical, and somatic features make the prognosis worse.

Conclusion.—From the small number of cases investigated it appears that psychotherapy is of value, since approximately two-thirds of the cases improved. There is no evidence to show that any one method of treatment was predominantly successful over the others, but each has its successes. At present the choice must be a matter for individual judgment and predilection. Nevertheless, the results of investigating prognosis in relation to character give some indication of the type of person most likely to respond to treatment, and give some guidance about the advisability of spending much or little time on a given patient.

I should like to thank Dr. Edward Mapother for kindly allowing me to make use of the material derived from patients attending the Maudsley Hospital.

[2] Kessel, L., and Hyman, H. T.: Jour. Amer. Med. Assoc., 1933, ci., 1612.

CLINICAL TRIALS WITH A NEW ANTITYPHOID SERUM *

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In experiments on mice, published in The Lancet [1] last year, it was established that antityphoid sera containing O and Vi antibodies exert two separate and distinct effects, viz :—

(*a*) The Vi antibody confers protection against infection with highly virulent strains of *B. typhosus*, by suppressing the multiplication of the organisms.

(*b*) The O antibody appears to be chiefly responsible for effecting the neutralisation of the endotoxin of *B. typhosus*.

It was concluded that the efficacy of a therapeutic antityphoid serum would depend on the presence in it of both these antibodies.

Thanks to facilities granted by the Colonial Office and by the Government of Palestine, I have had the opportunity of testing on a number of typhoid patients whether the two effects, established in prophylactic experiments in mice, are demonstrable also in therapeutic trials in man.

Antityphoid sera (Nos. 1 and 2) from two horses were used in this investigation. They were prepared in collaboration with Dr. G. F. Petrie and his colleagues at the serum department of the Lister Institute at Elstree. In addition, the serum from a normal horse was used for the treatment of a number of control cases. The antibody content of the sera, determined by agglutination, and the results of protection tests in mice

* Report to the governing body of the Lister Institute and the Colonial Office under whose auspices the clinical trials were carried out in Palestine.

[1] Felix, A., and Pitt, R. M.: The Lancet, 1934, ii., 186.

are shown in Table I. The details of the mouse protection tests are omitted. The table only indicates that the two antityphoid sera possessed both protective power against infection with live organisms and neutralising power against the toxic effect of a dead vaccine of *B. typhosus*. Normal horse serum had no effect in either of these capacities.

TABLE I

—	Antityphoid serum.		Normal horse serum.
	No. 1.	No. 2.	
Agglutination—			
O titre	20,000	40,000	200
VI titre	400 + +	400 +	20 ±
Protection of mice—			
Against infection with live organisms ..	+	+	—
Against the toxic effect of dead vaccine ..	+	+	—

NATURE OF THE TRIALS

The three sera were used unconcentrated and the standard dose for adult patients was 50 c.cm. administered by the intramuscular route. In severe to very severe cases this dose was given on three consecutive days—i.e., a total of 150 c.cm. of serum was injected intramuscularly. In cases of extreme severity (patients actually moribund or in a desperate condition) the serum was administered intravenously, again employing 50 c.cm. as the routine dose, which was repeated twice or three times at intervals of 24 hours, making a total of 150 c.cm. or 200 c.cm. per case. According to the history as regards previous serum treatment the intravenous injections were either given without particular precautions or the patients were desensitised by injecting first 0·1, 0·2 and 0·5 c.cm. at intervals of half an hour and then the full dose of 50 c.cm.

The total number of typhoid patients treated in Palestine during October–November of last year and the routes of administration of the serum are shown in Table II. The Table shows that most patients were adults. Only 9 of the 60 patients were children below fourteen years. The dosage for children was according to the following scheme:

TABLE II

—	Patients treated with—	
	Antityphoid serum.	Normal horse serum.
Intramuscularly	32	14
Intravenously	10	3
Intrathecally	1	—
Total	43	17
[Children below 14 years] ..	[6]	[3]

Children below 5 years	10	c.cm.
,, 6–9 ,, ...	20	,,
,, 10–14 ,, ...	30	,,
,, over 15 ,, ...	*50	,,

* Full dose for adults.

It is further seen from the Table that the number of control cases, treated with the normal horse serum, was much smaller than that of the patients treated with antityphoid serum. As soon as the difference between the results following the injections of the two types of serum became evident, the physicians in charge of the patients could not be induced to continue the use of the control serum.

The patients were not subjected to the treatment indiscriminately. They were selected with a view to exclude mild cases and those of moderate severity. The procedure was to class each case before the beginning of the serum treatment under the headings "severity of toxæmia" and "severity of pyrexia," and from these two criteria the "total severity" was derived. After the injections the "effect on toxæmia" and the "effect on pyrexia" was assessed and recorded separately.

The great majority of the patients came from the Jaffa-Telaviv district where the incidence of typhoid fever was still high during October–November, 1934. Table III. gives the exact figures.

TABLE III

Locality.	Hospital.	Physicians in charge.	Patients treated with—	
			Antityphoid serum.	Normal horse serum.
Jaffa ..	Government Hosp.	Dr. R. Reitler.	25	9
Telaviv ..	Municipal Hosp., "Hadassah."	Drs. M. Levontin and W. N. Wolff.	12	4
Jerusalem	Government Hosp.	Dr. N. Hamzeh.	3	4
,,	German Deaconness Hosp.	Dr. N. T. Canaan.	3	0
	Total		43	17

Uniformity in classifying the cases with regard to their severity was assured by the fact that 50 patients out of a total of 60 were treated in two hospitals under the care of physicians with particular experience of typhoid fever. It was also facilitated by the fact that in most cases the serum treatment was begun during the second or third week of the illness with the symptoms of the disease fully developed. The relevant data are recorded in Table IV.

TABLE IV

Serum treatment commenced during—	Patients treated with—	
	Antityphoid serum.	Normal horse serum.
First week	7	1
Second ,, ...	25	12
Third ,, ...	6	3
Later than third week ..	5	1
Total	43	17

RESULTS

The results of the serum treatment observed in the 17 control cases can be dealt with very briefly. Following the intramuscular or intravenous injections of normal horse serum there was in no instance any change in the toxæmic symptoms of the patients. In some cases the fever was lowered, but this effect was only temporary, and after a few days the temperature rose again. The general condition of most of the patients treated with normal serum was rather worse than it had been before, and this caused the physicians to discontinue its use early in the course of the investigation.

The effects of the treatment with the two antityphoid sera, on the other hand, were quite different. To avoid reproduction of a considerable number of individual case-charts I have attempted to summarise the results in Table V. It is seen that the series of 43 cases treated with antityphoid serum includes

only 1 case classed as "mild" and 9 of "moderate severity," whereas 21 cases are designated as "severe or very severe," and 12 as "extremely severe." The

TABLE V.—*Effects of Treatment with Antityphoid Sera Nos. 1 and 2*

Clinical course.	Cases treated.	Effect on—				Died.
		Toxæmia.		Pyrexia.		
		+	−	+	−	
Mild	1	0	0	1	0	0
Moderately severe ..	9	3	0	6	3	0
Severe or very severe	21	15	3	11	10	0
Extremely severe ..	12	6	6	5	7	5
Total	43	24	9	23	20	5

last group is composed of patients whose condition before the commencement of the serum treatment was considered as desperate or who were actually moribund.

It has been mentioned above that each case was classed separately under the headings "severity of toxæmia" and "severity of pyrexia," and that a "total severity" was derived from these two criteria. For the sake of simplicity this "total severity" alone is indicated in the first column of Table V., whereas "effect on toxæmia" and "effect on pyrexia" are recorded separately. The symbol + denotes a marked favourable effect, and − indicates that there was no effect. In each subgroup the sum of the two figures recorded under the heading "effect on pyrexia" is equal to the total number of cases treated. Under the heading "effect on toxæmia," however, the sum of the two figures is, in the first three subgroups, smaller than the corresponding total number; the difference indicates the number of cases without marked toxic symptoms.

Table V. shows that the effect on the toxic symptoms was stronger and more regular than that on the fever. Out of the total of 43 cases, 33 had definite toxic symptoms of varying degrees up to complete stupor and severest status typhosus. Of these 9 cases only remained uninfluenced by the serum treatment, whereas in 24 cases the toxic symptoms ceased, usually after the second or third dose of serum, and did not reappear. On the other hand, the fever was clearly shortened and definitely suppressed only in 23 cases, whereas 20 remained either entirely uninfluenced or showed merely temporary lowering of the fever, similar to that observed in the control group of cases treated with normal serum.

When the different subgroups in Table V. are considered separately, it is seen that with the increasing severity the numbers of failures increase under both headings. This finally led to the application of the intravenous route instead of the intramuscular injections which had been used throughout the greater part of the trial. The effect both on the toxæmic symptoms and on the fever was very much stronger following intravenous administration. However, it will be remembered from Table II. that only 10 of the 43 patients recorded in Table V. received intravenous injections, whereas 32 were treated by the intramuscular route.

To give an indication of the powerful antitoxic action of the immune serum it may be mentioned that in some instances two or three injections, given intramuscularly or intravenously at intervals of 24 hours, transformed a condition of complete unconsciousness into one of well-being. This effect was most striking in a number of patients whose toxic symptoms disappeared while the fever still continued unabated. The condition sharply contrasted with that observed in some of the patients of the control group, where the non-specific action of the normal serum resulted in a temporary lowering of the fever with the toxic symptoms left entirely undiminished.

It is not possible, without reproducing individual case-charts, to discuss the results in greater detail. The small number of cases treated also does not permit of any calculation of a reduction in the death-rate or in the duration of the fever period. All that can be stated is that a number of patients were justifiably considered as having been saved by the serum treatment, while in a number of less gravely ill patients the fever period was considerably shortened.

Two unusual cases seem worthy of being mentioned specifically. Both patients were treated by Dr. R. Reitler at the Government Hospital, Jaffa.

A woman of 32 developed on the twenty-third day of her typhoid fever meningitic symptoms and severest status typhosus. Lumbar puncture revealed clear fluid under high pressure; 70 c.cm. of fluid was removed and 40 c.cm. of antityphoid serum injected intrathecally, and there was slight improvement. The same procedure was repeated 48 hours later and resulted in definite recovery. The patient was discharged from hospital 14 days after the second injection of serum.

The second case was one of perforation of a typhoid ulcer in a male patient of 20, who left his bed in a semi-conscious condition on the fourteenth day of the disease. Dr. W. E. Thompson, surgeon specialist to the Department of Health, Jerusalem, operated on the patient about 18 hours after the perforation had occurred and administered 80 c.cm. of antityphoid serum directly into the peritoneum. The patient also received 50 c.cm. of the serum by the intramuscular route. He recovered, and the surgeon attributed this to the effect of the serum treatment.

There can be little doubt that the antitoxic activity of the serum is due to the O antibody. The serum No. 2 (see Table I.) with an O titre of 1 in 40,000 acted more strongly on the toxic symptoms than the serum No. 1 with an O titre of 1 in 20,000. To what extent the suppression of the fever is to be attributed to the action of the Vi antibody cannot be answered from the present trial, since there was no control group of cases treated with a serum containing O antibody alone. Assuming that pyrexia is an expression of the multiplication of the invading organisms with consequent production of toxin, we would conclude from the protection experiments in mice with Vi antibody alone that the effect of the latter in suppressing invasion would be most clearly manifested by the degree of fever in the earlier stages of enteric and in relapses. The earlier therefore the case comes under treatment the greater should be the opportunity for the Vi antibody to exercise the invasion-suppressing function so clearly exhibited in the mouse experiments. It is proposed in future clinical trials to compare a pure anti-O serum with the serum we have been discussing, containing both O and Vi antibodies.

However, the main object of the present investigation was to establish in therapeutic trials in man whether or not some action on the toxic symptoms and on the fever was exercised by the antityphoid serum. It would appear that the answer to this question is in the affirmative.

I wish to express my gratitude to the Colonial Office and to the Department of Health of the Government of Palestine for the facilities granted for carrying out this investigation and for the hospitality extended to me in Palestine. Dr. R. Reitler, medical officer, Government

Hospital, Jaffa; Dr. M. Levontin and Dr. W. N. Wolff of the Municipal Hospital, "Hadassah," Telaviv; Dr. N. Hamzeh, medical officer, Government Hospital, Jerusalem; Dr. N. T. Canaan of the German Deaconness Hospital, Jerusalem, have been in charge of the patients treated. It was only their kind and most efficient coöperation that made this investigation possible. I am glad of this opportunity of thanking all of them.

SURGICAL CLOSURE OF TUBERCULOUS APICAL CAVITIES

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The problem of the surgical closure of tuberculous apical cavities is one which is being seriously considered by surgeons at the present time, the more so as the value of total collapse of one or other lung by major surgery has become fully established. Tuberculous disease with cavitation which is confined to the apex is frequently seen, and it is naturally felt that the collapse of the whole of one lung by means of a total thoracoplasty may be a severe and unnecessary price to pay when the disease is localised. This is the main reason for the determined effort which has been made to produce a successful apical collapse without interfering with the rest of the lung.

We propose to deal with complete thoracoplasty in a later paper, but there are certain aspects of this major procedure which have a definite bearing on partial apical operations. Thus, its use should be confined to chronic fibrosing and cavernous cases in which pleural adhesions (either complete or partial) preclude the employment of artificial pneumothorax. As a general rule total thoracoplasty is applicable only to those cases in which there is no active disease in the opposite lung; moreover, this operation is a severe one which usually has to be performed in two stages (unpleasant though this is for the patient), and which involves a certain amount of shock and some, albeit slight, permanent deformity. To a certain extent these restrictions apply to localised apical operations, though in considering their indications and contra-indications we shall see that the restrictions are not quite so narrow.

In many cases of upper zone cavitation where an artificial pneumothorax has failed, or even as a complement to artificial pneumothorax, phrenic avulsion is performed. This is clearly an incomplete operation, but though its main effect is usually upon the base of the lung, it may also have a distinct beneficial influence upon the apex (see Fig. 1). It must be admitted that the effect on apical cavities is not as a rule very great, yet the operation is nearly always worth a trial on account of the minimal risk and discomfort associated with it. It can always be performed under a local anæsthetic, and need only entail the patient being in bed for a few days.

INDICATIONS FOR APICAL SURGERY

The type of case in which localised surgical procedures have seriously to be considered is nearly always one in which there are cavities in the apex, and where pleural adhesions prevent a complete artificial pneumothorax. The indications for the selection of cases are, in general, the same as those for a total thoracoplasty; but as we are now dealing with a partial operation in which a considerable area of undiseased lung is going to be left intact and functioning, a greater degree of latitude can be allowed. Moreover, these operations are responsible for much less shock and disability than is caused by a complete thoracoplasty. In the case of the total operation, the whole of one lung is permanently and irrevocably put out of action—a situation that does not apply to partial procedures. Thus, whereas no wise surgeon would countenance a complete thoracoplasty if there was any suspicion of active disease in the opposite lung, it is quite possible, and at times advisable, to produce apical collapse even when it is known that the opposite side is affected. In certain cases of bilateral apical cavitation (of a chronic type) it is perfectly feasible and often of great advantage to do a partial operation on both sides, though of course on different occasions.

The chief indications for performing collapse operations on the apex are as follows:—

1. The ideal case is one controlled by general treatment in which there is a single apical cavity without much surrounding fibrosis. Such a patient may feel and appear perfectly well, but the persistence of tubercle bacilli in the sputum, of slight or occasional fever, or of hæmoptysis is sufficient to show that the disease is not arrested. It is quite certain that the patient will never be cured, or even be safe from a spreading infection, until the cavity is obliterated. The prospect of further danger to himself and to others is always present as long as tubercle bacilli are found in the sputum.

When fibrous infiltration is present in bulk round cavities, the chances of any localised apical operation producing effective collapse are mechanically reduced. If the infiltration is extensive, it is more or less impossible, by a localised operation, to collapse only the diseased area, and the advisability of performing a complete thoracoplasty should then be considered.

2. In many more advanced or non-quiescent cases, and even in bilateral cases, there may be an open apical cavity which is acting as a source of infection for the base of the same lung or for the opposite lung as a whole. The outlook is here not so good, but it is often wise to close the cavities by surgical means, as it often happens that the patient's general resistance, supplemented by appropriate general treatment, will be able to deal with the disease in uncollapsed zones. This constitutes a group of cases from which the number selected for surgical treatment will obviously depend on the views of the physician or surgeon concerned.

POSSIBLE DANGERS AND COMPLICATIONS

Though the dangers, complications, and unpleasantnesses of these partial operations are far less than those of a total thoracoplasty, they nevertheless do exist. There is a certain amount of shock to be reckoned with, but this can be greatly diminished by suitable preparation, proper anæsthesia and, above all, by quick and gentle technique. It is indeed remarkable how slight the shock often appears to be in these tuberculous patients, and how well the procedures are tolerated.

It should also be remembered that in closing an apical cavity by surgical means some pus and active bacilli may be squeezed out, and there is the possibility that they may be inhaled into the base of the lung on the same or even the opposite side. This holds equally well in the performance of a total thoracoplasty, and is used as an argument for doing the lower stage first when the operation is being done in two stages. There is no doubt that a preliminary phrenic avulsion greatly

reduces the chances of an aspiration of this kind into the base of the lung, and with this precaution we personally have never seen any evil results due to an aspiration infection following upon an apical collapse.

The rupture of an unduly rigid or brittle-walled cavity as a result of uneven pressure during its collapse is a possibility. This complication may be guarded against by care and gentleness, and by making the extent of the operation and subsequent collapse slightly greater than that required just to cover the cavity.

Occasionally a spread of the disease or activation follows on the operation. When this occurs it is probably due to faulty anæsthetic methods, to an active lesion having been overlooked, or perhaps to an increased and too great functional strain being placed on the intermediate zone of lung tissue as a result of the collapse.

Failure to obtain complete collapse of a cavity is unusual, but it may be seen either when the walls of the cavity are very stiff, or when it is situated especially close to the mediastinum. This nearly always means that the wrong operation has been selected, or that the operation has been incompletely performed, an insufficient number or inadequate length of rib having been removed. One annoying result of this complication is that the cavity may remain open and more or less healthy lung tissue around it be collapsed, and then further operation will have to be resorted to before the cavity is collapsed.

Technical difficulties and dangers undoubtedly exist in these apical operations. Removal of the first rib should be as complete as possible (see below), and the dissection to free this structure is fraught with the risk of injury to important anatomical structures in relationship with it. The avoidance of serious damage can only be effected by experience, the necessary skill, and perhaps with the aid of a few special instruments.

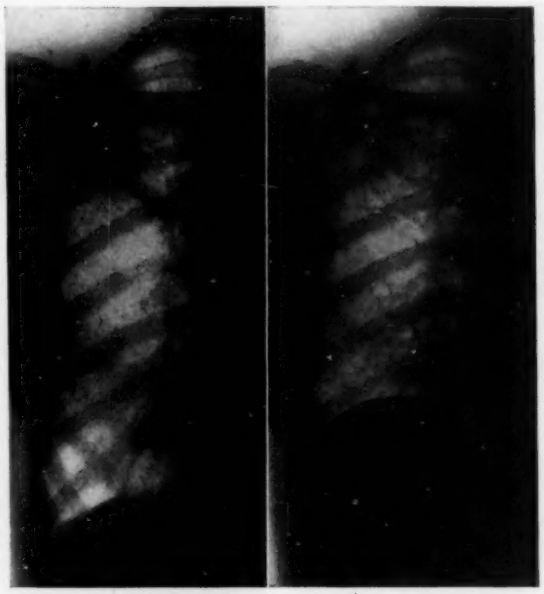

FIG. 1.—Diminution in size of an apical cavity following phrenicectomy. In the left-hand radiogram a large cavity is seen situated immediately under the right clavicle with infiltration spreading out to the periphery. The right-hand photograph shows the condition after phrenicectomy. The right diaphragm is considerably raised, while the cavity is slightly higher placed and shows a reduction in size.

OPERATIVE PROCEDURES

Phrenic Avulsion and Phrenic Crushing have often been described, and little need be said about them except to point out that though they are minor procedures, easily carried out under local anæsthesia, they are in no sense easy. However many hundred times the surgeon may have exposed the phrenic nerve, he will occasionally meet a case in which the nerve is extremely difficult to find.

In connexion with apical lesions, phrenicectomy by itself, though beneficial, is hardly ever the only operation required. We make a practice of doing it as a preliminary to the more extensive apical operation, very largely with a view to preventing aspiration as described above.

There is little difference between phrenic avulsion and crushing of the nerve, except that the former is permanent and leads to atrophy of half the diaphragm. It is the fibrous atrophied appearance of the hemidiaphragm, occasionally seen at post-mortem months or years after a phrenic avulsion, which has led some physicians and surgeons to advocate crushing of the nerve, with its possibilities of regeneration and less

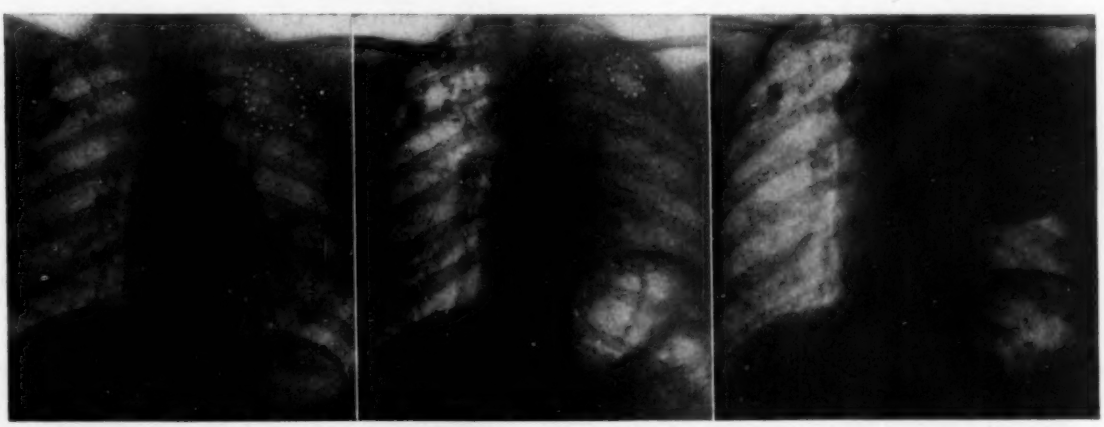

FIG. 2.—Closure of an apical cavity by phrenicectomy and apicolysis. The first radiogram (left) shows a large cavity situated below the left clavicle, and definite upper zone infiltration. There are calcified areas on the right. Following left phrenicectomy the cavity is reduced to about half its former size (middle photograph) and lies higher and more towards the periphery. There was still some cough and T.B. in the sputum. After apicolysis and wax implantation the cavity and apical tissue are completely obliterated (right). The uncollapsed lung showing between the lower limit of the "plombe" and the diaphragm is actually more extensive than appears in the radiogram.

complete atrophy. We are not, however, convinced that this is an argument of any force.

Scalenectomy consists in division of the scalene muscles and has been advocated as a supplement to phrenicectomy in certain cases of apical disease. Its object is to bring about a partial dropping of the first rib, and therefore slight collapse and diminution of movement at the apex. We have performed the operation on several occasions in conjunction with a phrenic avulsion quite easily through a small transverse incision, but we are not convinced that it is one of any real value. Complicated operations for exposure of the scalene muscles and first rib seem to us unnecessary.

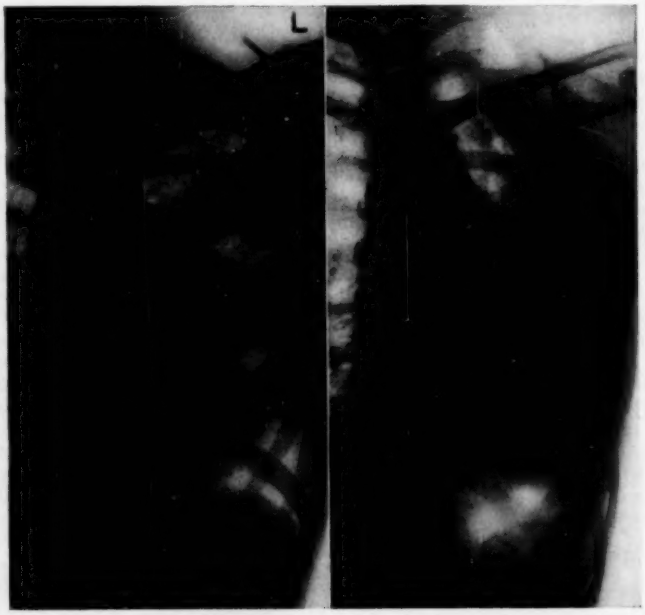

FIG. 3.—Closure of an apical cavity by partial thoracoplasty. The cavity is situated towards outer part of left lung below the clavicle; there is infiltration of the upper and middle zones of the left lung. Following a limited thoracoplasty (nearly all of ribs 1 to 3, and a length of rib 4) the cavity has collapsed and appears as a dense streak in the radiogram (right).

There are two main major surgical procedures employed to produce apical collapse. These are very different both in principle and performance. The one consists in the introduction within the ribs, and outside the parietal pleura, of foreign substances to compress and immobilise the lung. This procedure goes by many names, such as extrapleural pneumolysis, apicolysis, plombage, or, on the Continent, Plombierung. For the sake of uniformity we shall refer to it as extrapleural pneumolysis. The second method consists of a partial and specialised form of upper paravertebral thoracoplasty. It is not always easy to foretell which of these two methods will be more effective in any particular case.

1. The first method of *Extrapleural Pneumolysis* is usually done entirely from the front, and is therefore more likely to be effective if the cavities are nearer the front than the back of the apex. No ribs are removed, no deformity is produced, and there is very little shock. Moreover, when paraffin wax is introduced, the lung is not only collapsed and immobilised, but actual pressure is exerted over the cavities. On the other hand, in a certain proportion of cases the foreign material introduced is liable to give trouble after some months or even years. It may start to come out of the wound, and after a long period is completely extruded. In spite of this, the benefit of the operation is usually great, and persists even though all the foreign material has come away. More rarely, the foreign material finds its way into a bronchus and is coughed up without undue harm to the patient.

Extrapleural pneumolysis is based upon the fact, originally noticed in the post-mortem room, that when two layers of pleura are densely adherent to each other it is easier to strip the parietal pleura off the deep surface of the ribs than to separate the two layers of pleura from each other; the lung is far less likely to be torn if this is done. The procedure therefore consists in stripping the parietal pleura off the ribs, in the plane of the endothoracic fascia, for the required distance over the apex. This can be done from behind after the removal of one or two ribs, but the exposure is not good and the amount of stripping and wax introduction which is possible is small. A far better way of doing the operation is to do it from in front without taking out a rib at all. This was first performed in this country by one of us (W. H. C. R.) about fifteen years ago.

For this operation the patient is laid on his back and the upper thorax is slightly arched over a raised bar on the table. A long transverse incision is made from the sternal edge to the anterior axillary border between ribs 2 and 3, or, if preferred, between ribs 1 and 2. The fibres of the pectoralis major muscle are split along the line of the incision and the intercostal space exposed. The intercostal muscles are carefully incised down to the level of the parietal pleura which must be exposed without being damaged. At this stage it may be necessary to introduce some form of rib-spreader, but this is hardly ever required, and if used is liable to tear the pleura. With great care the pleura is then pushed off the deep surface of the ribs, and the dissection is carried up to the apex, along the front and sides of the lung and over to the back of the lung for as wide an area as may be required. The whole apex and upper part of the lung can then be displaced downwards and centrally, leaving a large extrapleural cavity. The problem then arises as how to fill this space with some substance which will maintain the collapse of the lung.

We have made many experiments during the last fifteen years as to what is the best substance to employ for filling the extrapleural cavity. The pectoralis major muscle can be used, but it is usually not big enough or long enough, and besides it soon atrophies. If a suitable lipoma can be obtained at the appropriate time from an operation on a patient with a negative Wassermann, this can be used with advantage, but these tumours are not easy to come by when required. We have sewn up the incision with an air-tight suture, and filled the extrapleural space with gas, thus creating an extrapleural pneumothorax, but the gas was exceedingly rapidly absorbed from the raw surfaces of the cavity and surgical emphysema was a very common sequel. We have also inserted a rubber balloon into the cavity and subsequently blown it up before the wound was closed; this produced excellent

immobilisation and collapse, while it was in position, but it could not be left in indefinitely as the air was liable to leak out and the rubber to perish. It was found that, in the majority of cases, paraffin wax was the best substance to use. This can be had at any melting-point required, and we generally employ it at a melting-point of about 55° C. It is sterilised and kept hot and liquid at the time of operation; then when required it is poured into a basin of cold sterile water. It sets quickly into a pliable jelly, which can be moulded and forced into every crack and cranny of the cavity. After the cavity has been completely filled the wound is sutured as carefully as possible without drainage. Care should be taken that the paraffin does not soil the edges of the muscle or skin, since this may interfere with healing. Healing by first intention is almost the invariable rule though, as we have already said, there is an occasional tendency for the wax to come out after some months (Fig. 2).

In one instance a large lump of wax slipped down within the ribs and found its way into unobliterated pleural sac at the base of the lung. This did not seem to do any great harm, and the result was still quite good. One conspicuous advantage that this operation possesses over all others lies in the fact that, in addition to obtaining collapse of lung, actual pressure is also exercised.

2. *Apical Thoracoplasty.*—The alternative operation to wax implantation is sometimes known as an apical or partial upper thoracoplasty. The nomenclature has unfortunately become rather confused by certain authorities also referring to this as apicolysis—a term which we prefer to reserve for the previous operation.

In principle the procedure is very similar to the upper half of the ordinary total paravertebral thoracoplasty, but more attention is paid to the first and second ribs from which considerably longer lengths are removed. The number of ribs that have to be removed depends entirely upon the size and situation of the cavities. It is probably never sufficient to remove the first rib only, and usually we remove good lengths of the upper three or four ribs, though occasionally five or six may be necessary. It is important to take away enough rib to get well below the lower limit of the cavity as shown in the X ray picture, while the abrupt nature of the collapse at the lower limit is eased, and the patient made more comfortable by excision of short lengths of a rib or two below; this gives the collapse a graded effect. This operation, properly performed, will produce practically complete collapse of the apex with little or no visible deformity. The collapse can be rendered even more effective by the addition of a certain amount of extrapleural pneumolysis, which can be simply carried out by blunt dissection after ribs have been removed.

The operation can be performed through an incision in the axilla, or through a high posterior J-shaped incision. We much prefer the latter method, and make a practice of freeing the scapula and carrying it well forward so as to ensure good exposure of the upper ribs. The whole of the first rib as far forwards as its cartilage should be removed in every case. This apparently difficult manœuvre is simplified by means of a special first rib elevator, and by a special method of stripping the rib from the highly important and easily damaged structures that lie in close relationship with it. The problem of freeing the first rib with safety is, in fact, rather similar to that of elevating the dura mater from the base of the skull in approaching the Gasserian ganglion and fifth nerve-root.

There are several methods of approach to the first rib, such as those suggested by Lauwers and Graf, but we have found the preceding by far the most simple, and one in which as small or as large an operation as required may be performed (Fig. 3).

STERILITY AND PSYCHONEUROSES FOLLOWING LUMBAR SYMPATHECTOMY

By Arthur F. Hurst, M.D. Oxon., F.R.C.P. Lond.
SENIOR PHYSICIAN TO GUY'S HOSPITAL

Lumbar sympathectomy is an operation which is undoubtedly of value in the treatment of certain vascular disorders affecting the legs and of intractable pelvic pain. In the last few years it has been performed with increasing frequency for megacolon, including Hirschsprung's disease, although, as I have shown in a paper in the *Guy's Hospital Reports* for July, 1934, it is very doubtful whether it can accomplish anything which cannot be attained by non-operative measures. It has also frequently been performed for constipation, though I have not seen a single case in the last twenty years in which medical treatment has proved sufficiently unsuccessful to warrant the performance of an operation of any kind. As an example of how recklessly the operation is sometimes undertaken, I may quote from a recent paper by S. H. Harris on renal sympathectomy. After saying very properly that "there is ample evidence to prove that the indiscriminate use of renal sympathectomy merits nothing but condemnation," he adds that in certain cases, when constipation is prominently associated with the renal disorder, "lumbar ramisection may be advantageously performed through the same incision," as "it adds only a very few minutes to the time of the operation." Lastly lumbar sympathectomy shows signs of replacing appendicectomy as the operation performed by the unwise surgeon who does not like to close the abdomen without doing anything if he finds no organic disease at an exploratory laparotomy.

The object of this paper is to make it more widely known that abdominal sympathectomy invariably leads to one serious complication in men. Time will show whether any other undesirable sequelæ may occur.

The first reference to the effect of sympathectomy on the sexual functions appeared in a paper by Learmonth in *Brain* (1931) on the Neurophysiology of the Urinary Bladder in Man. He showed that when the presacral nerve is stimulated a cloud of seminal fluid and prostatic secretion is poured into the prostatic urethra as a result of contraction of the seminal vesicles, ejaculatory ducts, and muscular septa of the prostatic gland. Consequently sympathetic neurectomy in males results in the abolition of ejaculation, although the sexual act is otherwise normal and the psychological orgasm is unaffected. In the following year, in a communication on the Innervation of the Bladder to the neurological section of the Royal Society of Medicine, he again referred to these observations and added that male patients must obviously be warned before operation that it will be followed by sterility although not by impotence. Lastly, in a paper on the Surgeon and Pain in the *British Medical Journal* for Jan. 12th of this year, he remarks that the only really undesirable sequel of presacral neurectomy is sterility, and adds that fortunately it appears to have no effect on the sexual functions of women. As, however, most of the females upon whom the operation has hitherto been performed have been elderly women in whom the sexual functions

are already in abeyance, it is still possible that these functions may be seriously impaired if the operation is performed in girls and young women; that fortunately Hirschsprung's disease is very rare among the former, though megacolon is not uncommon among the latter. The only other reference to sterility following sympathectomy which I have been able to find is in a paper by Paterson Ross (1934) on Prognosis of Raynaud's Disease, in which he states that after bilateral lumbar gangliectomy male patients, though still potent, are likely to become sterile.

Only those surgeons who read either *Brain* or the transactions of the neurological section of the Royal Society of Medicine may happen to have seen the two casual references to the subject in Learmonth's paper on the Surgeon and Pain, and Paterson Ross's on the Prognosis of Raynaud's Disease; they are likely to be still ignorant of this important sequel of the operation.

It is clear that lumbar sympathectomy should only be performed in males when a condition is present which is likely to receive sufficient benefit to compensate for the unavoidable sterility which will develop. I doubt whether it is ever justifiable in boys with Hirschsprung's disease. In the eight cases I have seen since the war non-surgical treatment led to improvement just as great as that claimed for sympathectomy. It is certainly a very serious thing to sterilise a boy, even with his parents' consent. Whether the Statute of Limitations will protect a surgeon when a sterilised boy, whose parents were not warned, reaches adult life is an interesting medico-legal question. There can be no doubt that the operation should never be performed on an adult male without his written consent after he has been told of the effect it will have on his sexual functions. If he knows what to expect he is also very unlikely to develop psychoneurotic symptoms as a result of the loss of emission, as his enjoyment of the sexual act will remain unimpaired and, if he already has as many children as he wanted, he may regard the operation as incidentally affording a safe means of contraception.

I have seen two cases in which the impairment in sexual functions following lumbar sympathectomy in men was followed by serious psychoneurotic symptoms.

CASE 1.—A mechanic, aged 47, had a left lumbar sympathectomy performed in September, 1933, followed six weeks later by a similar operation on the right side for bilateral thrombo-angiitis obliterans, which had been giving rise to intermittent claudication for six years in the left leg and one year in the right. Some improvement in the condition of the legs ensued. When he returned home after the operation he noticed that he was unable to get an emission, though his sexual functions were otherwise normal. He was much worried about this, and was still more upset when for the first time, on March 15th, 1934, apparently as a result of over-anxiety, he failed even to get a satisfactory erection. A severe headache developed, which had disappeared by the following morning. It returned at midday in an aggravated form, and half an hour later he became dizzy with blurred vision. He had been unable to eat his lunch owing to extreme dryness of his mouth. At 3 P.M. he lapsed into what he described as unconsciousness, but during this time he was very abusive to his wife. He regained consciousness an hour later, but still had blurred vision. The eyes of his wife and friends seemed like balls of fire, and he had lost the use of his hands and forearms. At 7 P.M. he went to sleep and woke two hours later quite normal. He was taken to hospital, but was found to have no abnormal physical signs apart from those due to his arterial disease. The attack was regarded as hysterical; he was reassured and discharged on April 14th.

He remained free from attacks until August, when he had one similar to the first. In October he had a third attack in every way like the other two, except that it was accompanied by a homicidal attack on his wife, whereas before he had merely been abusive. He was placed in a mental observation ward, where he remained quiet and mentally clear.

As the patient had never had any symptoms pointing to nervous instability before he discovered that he could not complete the sexual act with the normal ejaculation, it seems extremely probable that the attacks were purely psychogenic, and were a direct result of the impairment in his sexual activity resulting from the sympathectomy.

CASE 2.—A man of 45, married, with three children, had had since childhood abdominal symptoms which were probably the result of a megacolon, though that was not recognised until 1931. For several years he had had an anxiety neurosis for which he had recently undergone a course of psychotherapy. Lumbar sympathectomy was performed in 1932. From that time he found that the sexual act terminated without the occurrence of emission. He became extremely worried about this and thought that he was "losing his manhood." His anxiety symptoms, which had been troublesome enough before, became greatly exaggerated. Unfortunately, also, the operation had failed to produce any improvement in his abdominal symptoms. When it was explained to him that the loss of ejaculatory power was a natural result of the sympathectomy, although this had not been known at the time the operation was performed, he was greatly relieved. It was not the absence of emission which had worried him, as he had as many children as he wished for and sexual desire was unaffected. But the fear that the loss signified some serious change in his nervous system had become an obsession, which was at once removed when he realised that the cause was physical and not psychological.

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LEPTOSPIRAL JAUNDICE AMONG SEWER-WORKERS

BY J. M. ALSTON, M.B., M.R.C.P. Edin.
AND OTHERS

(*From Hospitals and Group Laboratories of the Public Health Department, London County Council*)

IN July, 1934, there was published an account by Dr. W. Hamilton Fairley[1] of a fatal infection of leptospiral jaundice in a sewer-worker in London, and in the same publication a report was given of serum agglutination reactions which indicated that eight sewer-workers who had previously suffered from jaundice had been infected by *Leptospira icterohæmorrhagiæ*. Since the time of this paper five more London sewer-workers are known to have suffered from jaundice which has been shown either conclusively or circumstantially to be due to the same micro-organism. The present report deals with three of these cases, and also describes the isolation of virulent *L. icterohæmorrhagiæ* from slime in London sewers.

The First Case

The clinical notes have been supplied by Dr. P. J. Watkin (Lambeth Hospital).

A. B., a man aged 52, was admitted to Lambeth Hospital (L.C.C.) on July 3rd, 1934. He had been employed intermittently during the previous five years as a flusher in sewers.

The *history* was that he had had pains in the legs for a week before admission, and had been jaundiced for the last four days of that period. There had been during this time occasional vomiting of chocolate-coloured material, in attacks which were sudden and severe. The urine had been

dark and the motions clay-coloured but without obvious blood. There had been great loss of appetite, and the patient had sometimes felt very faint. There had been no similar illness previously.

On *admission* the skin and scleræ were deeply jaundiced and the tongue dry and coated. The liver was not enlarged and no ascites nor abdominal tenderness were detected. There was slight pulmonary emphysema, and the heart sounds were indistinct and the rhythm tic-tac. The pupils reacted sluggishly to light and the knee-jerks could not be elicited. Nothing abnormal could be found in the muscles of the calves where pain was complained of.

The *progress* of the case from the time of admission was of gradual and general improvement with decrease of the jaundice, and during the early part of convalescence the patient was extremely weak. Except for a small rise of temperature to an average of 99·6° F. from July 11th to 14th, the course of the illness in hospital was remarkably afebrile.

On July 6th and 10th occult blood was found in the fæces, but on the 13th this reaction was negative, and the van den Bergh test with the blood-serum was of the prompt biphasic type. The result of blood count on July 13th was :—

Red cells	2,440,000 per c.mm.	Polymorph	84 %
White cells	15,400 ,,	Lymphocytes	12 %
Hæmoglobin	50 %	Monocytes	4 %
Colour-index	1·0		

The appearance of the red blood corpuscles was normal except for slight anisocytosis, and the average corpuscular diameter was 0·8 μ. In the urine bile was present at first, and albumin was detectable in small amount from the time of admission until August 15th.

By August 22nd the jaundice had almost entirely disappeared, and on Sept. 7th the patient was fit enough to leave hospital. He weighed on admission 9 st. 4 lb. and on discharge 10 st. 13 lb.

For *treatment* two doses of novarsenobillon had been given—0·35 g. on July 10th and 0·6 g. on July 16th. Aspirin and a mixture containing potassium citrate were also prescribed.

BACTERIOLOGY

Bacteriological investigations were performed at Lambeth Group Laboratory (Dr. J. A. Braxton Hicks) and Archway Group Laboratory (Dr. Alston).

On July 9th a microscopical examination, by dark-ground illumination, was made of the deposit of urine after centrifuging, and several immobile distorted spiral bodies were seen which were suspected of being leptospira. A large amount of this deposit was injected into the peritoneal cavity of a guinea-pig, which died 11 days later and then showed generalised jaundice and numerous hæmorrhages in the subcutaneous tissues and internal organs. Actively motile leptospira were seen in a specimen of the blood examined by dark-ground illumination and the organism was obtained in pure culture in Noguchi-Wenyon medium. In a specimen of blood taken from the patient on July 9th and in urine and blood obtained on the 16th, no evidence of leptospira was found microscopically or by animal inoculation.

Serum of blood obtained on July 9th and 16th was examined by Major H. C. Brown at the Wellcome Research Institute, and he found that both specimens gave a strongly positive adhesion test[2] with a London human strain (Jackson) of *L. icterohæmorrhagiæ*, indicating that the serum contained antibodies specific to that organism. It may be noted that very recently[3] the adhesion test has been correlated with and found equally sensitive to the agglutination test described by Prof. Schüffner.[4]

The Second Case

The clinical notes have been supplied by Dr. J. H. Simmons (St. Alfege's Hospital).

C. D., a man aged 35, was admitted to St. Alfege's Hospital (L.C.C.) on July 11th, 1934. He had been employed for three years as a flusher in sewers.

The *history* of the case was that on July 6th, five days before admission, the illness had begun suddenly—like "influenza"—with pains which started in the lower limbs and gradually extended upwards to the abdomen and between the shoulder-blades. The onset was so sudden that it could be referred to a particular moment while the patient was riding his bicycle. On the following day he had some lower abdominal pain and began to vomit. The vomiting was severe, and the material vomited was dark and may have contained blood. There was no other site of hæmorrhage. Jaundice was noticed the day before admission to hospital. The patient's health had been previously good except for chronic constipation. So far as he knew he had not recently suffered any abrasion or cut of the skin or a rat-bite. He stated that some of his workmates had been jaundiced, but so far as he knew they had not been ill enough to go to hospital.

On *admission* the patient was a well-developed man with intensely jaundiced skin and conjunctivæ. He was moderately ill, with a temperature of 100° F. and a pulse-rate of 116. The tongue was dry and coated, the gall-bladder tender, the liver not enlarged, and the spleen not palpable. No purpura or petechiæ were present. No pathological state was detectable in the heart or lungs. The urine contained bile-pigment in large quantity, a trace of albumin, and no sugar or acetone. The stools were dark.

The *progress* was that for the first few days the patient suffered from continual vomiting and dehydration, but these conditions were relieved by enemata followed by rectal injections of glucose saline solution. The general condition then improved, and temperature and pulse-rate had returned to normal on the fifth day. The jaundice and presence of bile in the urine took about a fortnight to subside. On the fifth day in hospital a transient erythematous rash was seen, mainly on the limbs. The patient left hospital on August 2nd.

The result of a blood count on July 12th was :—

Red cells	5,000,000 per c.mm.	Polymorph	87 %
White cells	17,000 ,,	Lymphocytes	9 %
Hb.	100 %	Monocytes	4 %
C.I.	1·0		

The blood-urea was 125 mg. per 100 c.cm. on July 12th, 145 mg. on the 14th, and had returned to normal limits by the 19th. The van den Bergh reaction gave an "immediate direct" positive result up to July 19th, and a delayed direct positive result on July 27th and August 8th, the number of units by the indirect reactions was highest—54—on July 14th and was 4 on August 8th.

BACTERIOLOGY

Dr. E. N. Allott (Lewisham Group Laboratory) and Dr. Alston (Archway Group Laboratory) investigated the bacteriology of this case. On July 12th and 23rd the urine was examined for leptospira by dark-ground illumination methods but none was seen. A guinea-pig was injected intraperitoneally on July 12th with the deposit from centrifuged urine, but no evidence of infection was detected. Specimens of blood-serum were obtained on August 4th and Sept. 12th, and both gave a strongly positive reaction in the adhesion test with *L. icterohæmorrhagiæ;* these results were kindly confirmed by Major Brown. In the case of the second specimen, the reaction could be obtained in dilutions of the serum up to 1/160.

The Third Case

The clinical notes have been supplied by Dr. G. C. Pether (St. Charles' Hospital).

E. F., a man aged 52, was admitted to St. Charles' Hospital (L.C.C.) on Nov. 18th, 1934. He had been employed since June, 1934, in relaying sewers for which he worked in very old open trenches, and the sewers contained much slime and silt. He had done tunnelling work before, but not for some years. During October he cut a finger of the left hand on the edge of a broken drain-pipe during employment, and this wound was dressed and he continued working.

Dr. J. Butler, Hammersmith, informs us that on Nov. 11th the patient felt very hot, and on the next day complained of pains all over and severe headache. There was a slight cough and a few bronchial râles, but no other physical signs of disease. The temperature was 102° F. Sodium

salicylate was prescribed. On the 13th and 15th the patient had been sleeping badly and the medicine was being vomited, even when diluted. On the 15th a little milk was retained and Medinal grs. 5 was prescribed. The temperature on those days was 99·6°and 99°. On the 17th the urine was dark red with blood, and a little blood was coughed up and the patient complained of itching, and jaundice was probably present. The temperature was 99·2°. On the 18th the patient was jaundiced all over, there was much blood in the urine, and epistaxis and hæmatemesis occurred. The liver was enlarged and the stools were clay-coloured for the first time.

On *admission* delirium and slight twitchings were present and the temperature was 98°. On the 19th the condition was almost the same, the conjunctivæ were much injected, epistaxis had recurred, and blood and bile were detectable in the urine. Blood was vomited, and both altered and fresh blood was present in the stools. The result of a blood count was: red cells 2,670,000; Hb., 50 per cent.; C.I., 0·9; leucocytes, 25,000 (polymorphs 91 per cent.). On the 21st the condition became worse, restlessness and twitchings were more marked, and an estimation of blood-urea showed 480 mg. per 100 c.cm. On the 22nd the patient died.

At the time of admission the patient was questioned about the possibility of contact with rats in the course of his work. He appeared to be sufficiently rational to appreciate the question and denied the likelihood of any such contact. In view however of the severe and unusual symptoms which developed two or three days before death the possibility of leptospiral jaundice was entertained, and a specimen of blood-serum was examined by Major H. C. Brown and the leptospiral adhesion test was found strongly positive. On the result of this test leptospiral antiserum was immediately ordered, but it was not received until after the patient's death.

POST-MORTEM FINDINGS

The following is an account of investigations by Dr. W. G. Barnard (Central Histological Laboratory, Archway Hospital):—

Autopsy.—Dark canary-yellow jaundice of skin and less severe of all serous surfaces; well-nourished, well-developed muscular man. A few small recent abrasions on skin of chest probably due to scratching; laceration of nail of middle finger of left hand extending throughout its length. Pale flabby myocardium. Moderate general and coronary atheroma. Slight broncho-pneumonia, œdema, and congestion of posterior parts and bases of both lungs. Enlarged flabby olive-green liver. Bile-ducts patent. Thin dark-green bile in gall-bladder. Congestion of spleen. Enlarged kidneys with swollen jaundiced cortex and slight hæmorrhage in pelvis beneath capsule and in perirenal fat. Slight hæmorrhage in fatty tissue round both adrenals. A few scattered hæmorrhages in mucosa of stomach and throughout intestines. Pale greenish-brown urine in bladder. A few minute hæmorrhages in mucosa of bladder. Slight diffuse subdural hæmorrhage and a few petechiæ in cortex of œdematous brain. Middle ears and mastoids clean.

Histology.—The following organs were examined histologically: liver, kidney, spleen, adrenal, lung, brain, pituitary, and parathyroid. The sections were stained by Ehrlich's hæmatoxylin and eosin, by van Gieson's method, and liver, kidney, and adrenal sections were stained by Levaditi's method for spirochætes. The macroscopic findings were confirmed. In addition there was an excess of polymorphs in the spleen, and slight fibrosis of the anterior lobe of the pituitary. The changes in the liver and kidney warrant a more detailed description.

In the liver the chief changes consisted of jaundice and degeneration of cells in the central parts of the lobules and in those of the mid-zonal regions. The jaundice was less severe than that expected from the naked-eye appearance, and the degeneration consisted of fatty change and necrosis of scattered individual cells. There were patches of subacute inflammatory infiltration of the interstitial tissue of the kidney, the reaction consisting of plasma cells, lymphocytes, and a few polymorphs. The epithelium of the convoluted tubules was everywhere degenerate, many of the cells contained bile-pigment, and in many tubules there were bile casts.

Comment on autopsy.—Definite spirochætes were not found, but particularly in the kidney and adrenal there were strictures resembling fragmented spirochætes and many granules that might well have been the remains of spirochætes. The slight degree of degeneration and necrosis of the liver, the widespread subacute interstitial infiltration and degeneration of the epithelium of the kidney, together with the severe general jaundice, make up a characteristic picture, and one that is not found in any other disease.

BACTERIOLOGY

Material obtained at autopsy was examined bacteriologically at St. Mary Abbots Group Laboratory (Dr. G. W. Goodhart) and Archway Group Laboratory (Dr. Alston). Blood, urine, and emulsions of liver and kidney tissue in which no leptospira could be seen microscopically were inoculated intraperitoneally each into two guinea-pigs, but no certain evidence of infection, by temperature reaction, clinical signs, or autopsy was obtained in these animals or in others inoculated with their blood and tissues. The patient's blood-serum was found to give a positive adhesion test in dilutions up to 1/160.

Comment on the Cases

Of these three cases the nature of the infection was fully proved in the first, and was made very strongly presumptive in the second by the clinical course and the positive leptospiral adhesion test, and in the third by those features and by the post-mortem findings in addition. In all three cases, also, there was a polymorphonuclear leucocytosis which is constantly found in leptospiral jaundice, and is in contrast with a tendency to leucopenia, and an absolute or relative lymphocytosis which have been observed in epidemic catarrhal jaundice by investigators abroad and in this country.[5]

Two small epidemiological points may be made. Since the fatal case described by Dr. Fairley was of a man who had worked for only three weeks in the sewers, it was thought possible that cases might be found chiefly among the recent recruits to this work, but on investigation the length of service in sewers of the three cases reported above and of other recent cases was of five months to five or more years. Secondly, infection has occurred among both classes of sewer-workmen—building labourers and flushers. The former are much engaged in chiselling out and handling the slime-covered brickwork of the bottom of the sewers from which, as described below, virulent leptospira can be demonstrated, and abrasions of hands often occur. Flushers are not in such close contact with the slime, and obvious skin abrasions are not so frequent. The fact that both types of workers may become infected suggests that the route of infection in some may be by the mucous membranes of the alimentary or respiratory tracts as is believed to occur in persons infected with *L. icterohæmorrhagiæ* after falling into[4] or drinking[6] contaminated water. It may be said that sewer-workers are, in general, instructed to have major abrasions or cuts cleaned and covered, and hot water and soap are provided for them to clean their hands at the end of work and at breaks for food; but in addition to these dangers, there is also the possibility of infection by touching the mouth or nose during work.

Isolation of L. Icterohæmorrhagiæ from Rats and Slime in Sewers

Before the occurrence of the fatal case of leptospiral infection in a sewer-man which was described by

Dr. Fairley, and has already been referred to, it had been decided at the instigation of the Public Health Department, L.C.C., to investigate the possibility that cases of jaundice that had occurred from time to time among sewermen might be due to leptospiral infection. For this purpose some strains of *L. icterohæmorrhagiæ* were isolated from sewer rats and the presence of the organism was sought in sewer slime with which the workmen inevitably come into contact. No effort was made to estimate the proportion of rats caught in sewers from which leptospira could be isolated, because the fact of a varying but often high incidence of infection of rats by the leptospira is known from surveys on rats caught in different situations in several parts of this and other countries; but by the inoculation of guinea-pigs with kidney and liver tissues from rats caught in sewers in eight different parts of London five strains of virulent *L. icterohæmorrhagiæ* were obtained. Four of the strains were obtained by subcutaneous inoculation of guinea-pigs with rat tissues, but in one instance in which intraperitoneal inoculation was used the circumstances of the isolation may be mentioned. In this instance it was thought that a few inactive leptospira were present in a preparation from the rat's kidney examined by dark-ground illumination. A guinea-pig was inoculated intraperitoneally with a suspension of ground kidney tissue and remained alive and apparently well for a period of six weeks and then was killed. No evidence of jaundice, hæmorrhage, or other lesion suggesting leptospiral infection was found at autopsy, and no leptospiras could be seen in preparations of blood, liver, or kidney examined by dark-ground illumination. Another guinea-pig was inoculated subcutaneously with the tissues of the first and it died thirteen days later showing jaundice of the subcutaneous tissues and hæmorrhages in the thoracic and abdominal organs—a typical picture of leptospiral infection. The demonstration of leptospira in the blood and tissues by dark-ground illumination was doubtful, but a pure culture of these organisms was obtained from the blood by inoculation of Noguchi-Wenyon medium.

By a similar technique of inoculating guinea-pigs by subcutaneous injection or by scarification, pathogenic leptospira were demonstrated in a specimen of slime from the floor of a sewer near the spot where Dr. Fairley's patient had been working immediately before his fatal infection, and in another specimen from the outlet of a house-drain into a different sewer. It is worthy of note that in the case of each of these specimens, only one out of two guinea-pigs inoculated in the same way and at the same time succumbed or showed any evidence of infection. Twenty-eight similar specimens of slime from the floor or lower part of the walls of the sewers or from the outlets of drains produced no sign of infection in the animals inoculated with them, and six specimens of the small slimy stalactites which form on the roof and contain chiefly gritty material from the cement of the brickwork did not give rise to any evidence of infection in guinea-pigs. This isolation of virulent leptospira from sewers recalls the isolation of the same organism from slime in a coal-mine recorded several years ago.[7]

In the inoculation experiments described young guinea-pigs of about 300 g. weight were used, but as has just been noted they were clearly unequal in susceptibility to infection by the same route, even although temperature records were not taken for detecting slight non-fatal reactions. In isolating the leptospira from both slime and rat tissues in which the leptospira were probably very scanty, inoculation by subcutaneous injection or, as maintained by C. C. Okell, by rubbing inoculum into scarified skin surface was found more effective than intraperitoneal injection with guinea-pigs of the size used (300 g.), which was the smallest available.

Acknowledgments are made to Dr. P. J. Watkin, Dr. W. D. Wiggins, and Dr. B. Hood, medical superintendents of, respectively, Lambeth, St. Alfege's and St. Charles' Hospitals for permission to publish notes of the cases. Thanks are given to Mr. S. J. Denyer, senior technician at Archway Group Laboratory for assistance.

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Clinical and Laboratory Notes

A CHAPTER OF ACCIDENTS IN A CASE OF KALA-AZAR

By A. Piney, M.D. Birm., M.R.C.P. Lond.

ASSISTANT PHYSICIAN TO ST. MARY'S HOSPITAL FOR WOMEN AND CHILDREN, LONDON, E.; HON. PHYSICIAN, ST. PANCRAS DISPENSARY, N.W.

There is a modern prejudice against the publication of single cases, but there are occasions when a patient presents so many points of interest that it is improbable that a series of similar observations could ever be collected. In the present case there was such a concatenation of accidents as is never likely to be repeated.

Mrs. A., aged 39, whom I saw at the request of Major J. R. Yourell, R.A.M.C. (ret.), had been in India in 1929 and again in 1932. During her stay there she had not suffered from any disability other than slight concussion, due to a fall from her horse. When I saw her on July 29th, 1934, she said that she had been feeling unwell for about twelve months, and that she had had an almost persistent evening temperature in the region of 100·6° F. For a time she had been treated for colitis, and in April, 1934, there had been some argument about the palpability of her spleen, but this discussion was stopped because she apparently developed an acute cholecystitis, which was operated on by Mr. E. K. Martin, who found only a distended gall-bladder with no signs of calculus or infection. She was gravely ill but recovered relatively rapidly, although the evening rise of temperature persisted.

When I saw her she was extremely pale; there were a few pigmented patches on the inner sides of the arms; the spleen was firm and slightly tender, extending down as far as the umbilicus. The liver was also enlarged, extending three fingers-breadth below the costal margin. The blood showed:—

Red corpuscles	2,300,000 per c.mm.	Neutrophils	70 %
Leucocytes	2,000 ,, ,,	Monocytes	20 %
Hæmoglobin	38 %	Lymphocytes	10 %

The clinical and hæmatological characters suggested the possibility of kala-azar, and the patient was seen by Dr. Carmichael Low. A liver puncture was performed, but although many endothelial cells were found in films, no definite Leishman-Donovan bodies were recognised.

Treatment with intravenous Neostibosan was started, and by the end of a week there was distinct decrease in the size of the spleen. On the eighth day there developed great abdominal distension, and enemas, acetylcholine, and Prostigmin failed to cause any improvement. As the condition became definitely worse, Mr. A. L. Abel performed a laparotomy on August 9th, 1934, and found a volvulus of the pelvic colon. At operation there was a small amount of clear fluid in the peritoneum and a peculiar semi-gelatinous thickening of the mesentery. The cæcum

was brought to the surface but not opened, as we thought that a "safety valve" might be needed later. She did very well after the operation, although the temperature never settled. At this time there was slight œdema of the ankles. Treatment with neostibosan was continued until 3·0 g. had been given, and on August 29th the spleen was not palpable and the liver did not appear to be enlarged. The œdema of the ankles had slightly increased and, indeed, extended half-way up the calves. The temperature was normal and all looked very promising, especially as the hæmoglobin was now 69 per cent.

On August 10th the temperature started to rise again and œdema of the legs extended right up to the thighs, and at the same time there was much fluid in the abdomen. The next day the right side of the chest was full of fluid, but even so the amount of urine passed was not decreased and there was no albuminuria. The blood-urea level was normal. There was now so much respiratory embarrassment that she was seen by Dr. G. E. Beaumont, at whose suggestion she was given a transfusion and an injection of Salyrgan. It was difficult to find a vein for the transfusion, as so many had been used for the neostibosan and for pre- and post-operative transfusions, but nevertheless it was done. The urine output fell and nothing influenced it. The œdema became enormous, the abdomen was distended with fluid, and both sides of the chest were full. The prognosis seemed hopeless, and this view was confirmed by Lord Horder. So convinced were the nurses of her impending death that the matron of the nursing-home, who was short of space, let my patient's room! In a despairing attempt I injected 5 c.cm. of salyrgan intravenously at a time when the patient was almost unconscious, and within twelve hours she had passed 6 pints of urine and was feeling better. All this time the blood-urea was only slightly raised and there was only the faintest haze of albumin in the urine; casts were absent. She was put on ammonium nitrate and was given several more injections of salyrgan until the œdema had disappeared and she was feeling well; but the temperature never became quite steady, although the evening rise was never above 100°.

For a month all seemed to be going well, although slight œdema of the ankles had recurred. The patient was being kept in the nursing-home only because she was so thin and weak that it was felt better to prolong her stay. Her hæmoglobin was 72 per cent., and her leucocyte count, total and differential, was normal.

Suddenly, exactly one month after her last collapse, she had a violent fit without any prodromata. The nurse was taking her pulse when Mrs. A. cried out, went through a clonic stage into a tonic one, and remained unconscious. I saw her three-quarters of an hour later when she had had two more fits. She was deeply unconscious, and while I was examining her had another seizure, which was a typical epileptiform one. Dr. F. M. R. Walshe kindly saw her in consultation with me within two hours of the first fit and could find no explanation. Soluble Luminal was given, and after three more slight fits in the night no more occurred, although the patient remained unconscious. After 24 hours I did a lumbar puncture; the fluid was not under pressure, was clear, and chemically and cytologically normal. Within two hours there were signs of returning consciousness. No urine was passed for 36 hours, and only 2 oz. could be drawn off by catheter. This was loaded with albumin, but there were only a few hyaline casts present. There was now enormous anasarca, but the blood-urea was never above 50 mg. per 100 c.cm. The blood pressure was 150/100, which was surprising, for it had never been raised before the first fit. The chest was again full of fluid, which, on Dr. F. G. Chandler's advice, was not aspirated.

The signs of returning consciousness were so encouraging that I once more tried salyrgan, giving 3 c.cm. intramuscularly, and in the following 24 hours she passed 296 oz. of urine! By the time she had passed 100 oz. consciousness had returned. And after three more doses of salyrgan all œdema had gone, the blood pressure was normal, and she felt well. But the temperature still ranged between 99° and 101°, and no cause for this could be discovered. So, on purely empirical grounds, I gave her a series of subcutaneous injections of arsenious acid (rising from 1 mg. to 10 mg. and down again), and her temperature became normal and stayed so.

She returned home in time for Christmas, 1934, still being thin and weak on the legs, and still having an extensor plantar reflex on the right side. Since then she has continued to regain strength, the plantar reflex has become normal, and her temperature has not been above 98·4°. Her blood is normal and one may presume that after having been given up three times she is now cured. But what was the nature of her renal lesion is indeed a mystery.

The case seemed to be worthy of record because one so often tries to encourage relatives by saying "while there is life there is hope," but it is rare to meet a case in which this tentative optimism is justified.

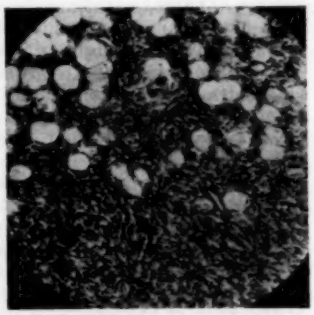
MALIGNANT KELOID FOLLOWING VEIN PUNCTURE

By M. L. Kenig, M.D. Montpellier

RESIDENT MEDICAL OFFICER, FRENCH HOSPITAL AND DISPENSARY LONDON

In 1918 the patient, a healthy male aged 44, had some blood withdrawn from a vein in the antecubital fossa. He remembers that afterwards a bruise persisted for "months," and later a scar could be seen and felt at the place where the needle had penetrated the skin. In 1932 a nodule the size of a pea was first noticed. From 1932 to 1935 more growths developed, and as the application of iodine did not disperse the tumours hospital advice was sought.

On examination three nodules about 20 mm. in diameter were found in the anterior bend of the elbow. There was no discoloration of the skin covering them, and when palpated they were found to be attached to the deep tissue and could not be moved freely one from another. Other smaller deep irregularities were felt. On pressure with a glass slide the skin over the larger nodules became cyanosed. Mr. Cecil Burnham, senior surgeon to the French Hospital, diagnosed the condition as malignant, and decided on operation. On Jan. 9th, 1935, he made an incision wide of the tumours and removed them en masse. A considerable number of large vessels arising from the deep fascia supplied this area, and care was taken to remove all the smaller growths which were spreading from the under surface of the main larger masses. The raw surface of the wound was covered with sterile gauze until Jan. 23rd, when a Thiersch graft was done. It is of interest to note that the graft had completely "taken" within five days, and that except for slight œdema distal to the graft the wound had consolidated a fortnight later, allowing full flexion and extension of the elbow-joint.



A field demonstrating the invasion of fatty tissue by the spindle cells. (Low power magnification.)

The tumours were sent to the laboratory for histological examination, and Dr. H. Schwabacher's report was as follows: "The dorsal surface of an elliptical piece of skin 8 by 5 cm. is rendered uneven by circular elevations varying from 2 to 15 mm. in diameter. On the subcutaneous surface these elevations are seen as oval or round nodules, about fifty in number. They are resistant to the knife, their cut surface is glistening, and they are fused together so that they cannot be dissected one from the other without

including fatty tissue and fibrous strands. The section shows a mass of spindle cells spreading in all directions and invading the muscle and fatty tissues. There is no attempt at encapsulation. The individual cell has an oval nucleus which takes up almost the entire breadth of the cell. Only a few mitotic figures can be seen, and the blood is retained within the lumen of the vessels of which the endothelium is intact. The growth has probably arisen from the scar tissue of the venepuncture, and on account of the absence of evidence of great activity it may be regarded as a locally malignant keloid."

I wish to express my thanks to Mr. Burnham for permission to publish this case, and to Dr. Schwabacher for the pathological report.

A CASE OF CANNABIS INDICA INTOXICATION

By E. T. Baker-Bates, M.D. Liverp., M.R.C.P. Lond.

ASSISTANT HONORARY PHYSICIAN, ROYAL SOUTHERN HOSPITAL, LIVERPOOL; REGISTRAR AND PATHOLOGIST, LIVERPOOL HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST

Instances of poisoning from Indian hemp grown in England are uncommon; it has been stated [1] indeed that plants grown in this country do not form the active resin and have little or no pharmacological action. The following cases are therefore of toxicological importance.

A young man, having read about Indian hemp in the "Chemistry of Common Life," by J. F. W. Johnston [2] which describes it as "an increaser of pleasure, the exciter of desire, the cementer of friendship, the laughter-mover, and the causer of the reeling gait," separated the hemp seeds from the parrot food and planted them in his garden during June. In September, when the plants were about four or five feet high and flowering, he plucked the leaves and tops, dried and chopped them and made them into cigarettes; these he smoked on several occasions and experienced mild symptoms of cannabis intoxication—e.g., loss of sense of time and space, vivid dreams or hallucinations and subsequent drowsiness.

Incredulous about his experiences, his fiancée, aged 22, smoked—and to some extent inhaled—about two-thirds of a cigarette, made from the top of a fruiting plant. This was at about 10.10 P.M. Soon afterwards she fell asleep and a few minutes later, on being disturbed, she awoke with a start and exhibited apprehension. The eyes were bright, the hands were twitching, and she appeared intoxicated; she asked where she was—probably deceived by hallucinations—but seemed happy. At about 10.25 P.M. she was taken for a short walk, which was interrupted by outbursts of laughter and of affection; her speech became slurred from dryness of the mouth and her gait increasingly unsteady. At 10.30 P.M. she was taken to a doctor and the history explained; he recorded that she was pale, but able to stand and walk although feeling dizzy; she was very excited and talkative and made stiff purposeless movements with her hands; her state was highly emotional, even amorous, towards her companion; at one moment gay, she was next anxious and said she felt "enclosed"; she exaggerated the passage of time and was confused about spatial dimensions; her tongue and mouth felt parched and words were pronounced with difficulty, while sentences lapsed into incoherencies; the eyelids were half closed; the pupils dilated, but reacted to light; the pulse was rapid, but strong.

She was transferred by police ambulance to the casualty department of the Liverpool Stanley Hospital where she arrived at 11 P.M. in a collapsed condition. Her symptoms at that time were loss of power in the legs and inability to stand; dizziness, dryness of the mouth, and palpitation; and lengthened estimation of the passage of time. She believed her condition had lasted many hours and, although fully conscious of her existence, she imagined she was "outside her own body" (a hallucination of dual personality), enclosed in a small space, and surrounded by a mist from which she could not escape. This imaginary mist did not impair her vision for distant objects.

On further examination speech was found to be confused, rambling, and often inarticulate. She was unable to stand steadily or without support, and showed great incoördination in the movements of the hands. There was tachycardia (140 per minute) and also marked inspiratory dyspnœa. No other abnormality was found. Following general treatment for shock the patient recovered in nine hours and there were no sequelæ except severe headache.

These cases are interesting in that they refute the impression that cannabis indica grown in England is devoid of toxic properties and they exhibit the two typical illusions—those of time and space—and the rapid onset following inhalation of the drug of characteristic symptoms which could be divided into three stages—namely, excitation, motor incoördination, and narcosis.

Pharmacologists recognise great variation in the activity of cannabis indica and much difference in the susceptibility of varying races and temperaments to its action. Fatal results are rare. The initial symptoms, which are clearly due to depression of judgment and the critical faculties, are commonly represented by apparent exhilaration of the intellect, associated with—as in normal dreaming—a rapid flow of pleasant and fantastic ideas and illusions resulting in hilarity or demonstrations of affection, and a gross exaggeration of the passage of time as well as an ocular illusion that near objects are at a distance. There may be sexual excitement, but this is dependent on the psychology of the individual. If the action progresses, there will follow sensory impairment and muscular incoördination, and ultimately deep sleep which may be associated with vivid dreams. On awaking there is commonly some lassitude and impairment of mental functions.

Frequent indulgence in cannabis, which is as prevalent as the hashish habit in the East and latterly in Mexico and South America, results in loss of judgment and restraint and is accountable not only for cases where natives "run amok," but also for various types of insanity.

From the medico-legal standpoint this case is interesting, because although the Dangerous Drugs Acts control the purchase of the extract and tincture of cannabis indica, there is no law against the possession of or smoking of the plant. The man could have been proceeded against under the offences against the Persons Act 1861 for giving a drug to another with harmful intent.

The hot summer of 1933 may have been the reason why the seeds grew so well in England. There is a possibility that if the fact that hemp seeds could be grown with ease in England were widely known hemp-smoking might become a national menace.

In conclusion I wish to express my gratitude to Prof. Walter Dilling for his interest and advice in this communication.

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Children's Hospital, Pendlebury.—The foundation-stone of the Zachary Merton convalescent home, which is to be part of this hospital, has been laid by the Lord Mayor of Manchester. The home will consist of an administrative block with two single-storey wings, each accommodating 20 children.

MEDICAL SOCIETIES

NORTH OF ENGLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY

AT a meeting of this society held in the University, Liverpool, on March 22nd, Mr. A. GOUGH, the president, being in the chair, Dr. F. J. BURKE read a paper entitled

"Amniography"

In recent years, he said, it had been found possible to diagnose placenta prævia by means of the X rays. The importance of this discovery was not widely appreciated in spite of the need for improvements in the method of diagnosis. After a brief summary of what had been done by others, Dr. Burke described some of the difficulties and gave the results of 23 cases; in 5 of these X rays showed a placenta prævia. There did not appear to be any gross risk to the mother. Of the 5 neonatal deaths and stillbirths in his series, 4 could be accounted for by natural causes. An injection of uroselectan into the uterus tended to induce labour; he described 27 cases in which it had been used for this purpose. Five abortions were also induced by means of uroselectan, and he discussed the types of cases in which it should prove useful. A large proportion of the drug he had found was excreted by the kidneys.

Dr. C. H. WALSH said that injection of uroselectan into the uterus had the following uses: (1) to show up the fœtus in early pregnancy; (2) to demonstrate the position of the placenta; and (3) to induce abortion or labour. The method was, he added, entirely without risk to the mother and child.—Mr. J. ST. GEORGE WILSON said he had used the method in a few cases but had not been entirely successful because the X ray films were too small.—Prof. MILES PHILLIPS agreed that the method described might be of value in some cases.—Prof. D. DOUGAL asked if the position of the placenta could not be shown by a simple X ray without previous injection of any opaque substance.

Prof. A. LEYLAND ROBINSON and Mr. M. DATNOW described a case of

Vesico-vaginal Fistula

of unknown origin, with a new apparatus for the control of urinary incontinence. The patient was aged 45, a two-para, and had had her last child 15 years previously. She was two years after the menopause and came to the hospital complaining of urinary incontinence of only one month's duration. Examination revealed a large vesico-vaginal fistula about half-way up the anterior vaginal wall. No growth was present. Urinary investigation for tubercle bacilli proved negative and the Wassermann reaction also was negative. Uroselectan injection showed complete absence of function of the right kidney with hydronephrosis on the left side. The left ureter was dilated in its whole length. Operation failed to close the fistula. The speakers demonstrated the apparatus which the patient had found very satisfactory for controlling her urinary incontinence. They had also inserted the instrument in other cases with satisfactory results. It consisted in the main of a ring pessary with a diaphragm to which was vulcanised a rubber catheter whose end was inserted into a bag that was worn on the patient's leg. The instrument has to be removed and cleansed each week.

Miss G. GRIFFITH described a case of

Complete Avulsion of the Uterus

during an attempt at manual removal of the placenta. The patient was delivered by forceps of a stillborn infant. No difficulty was encountered. The practitioner attempted to express the placenta and then decided to remove it manually because of the excessive bleeding. On removing her hand from the vagina, she found to her amazement that it was the uterus which she held in her grasp. After admission to hospital and treatment for shock, laparotomy was performed and the peritoneum sutured. Miss Griffith demonstrated the specimen.

Prof. DOUGAL described a case which was reported to the Obstetrical Society and said that very little force was required to avulse the uterus.—Prof. MILES PHILLIPS had collected 36 cases of avulsion, 15 of whom had recovered. There was little or even no force needed to be used for removing the uterus. In these cases there could be no doubt that more or less complete separation of the uterus from the vagina occurred spontaneously. In other cases there was evidence of varying degrees of violence.

Mr. T. N. A. JEFFCOATE described a case of

Hydatidiform Mole

with negative Aschheim-Zondek reaction. He drew attention to the fact that undue enlargement of the uterus was not an invariable accompaniment of hydatidiform mole, and his case was an example of this. The test carried out with the urine in this patient gave a negative result. This was, he thought, due to the fact that the mole was dead and the chorionic elements inactive.

The PRESIDENT described a case of typical hydatidiform mole in which the test had been negative for some unexplained reason. He suggested the possibility that the urine in some cases of hydatidiform mole contained so much hormone that the test animals did not show any reaction unless the urine was diluted first.—Prof. MILES PHILLIPS said it had been brought to the notice of the society by Prof. Briggs that in many cases of hydatidiform mole the uterus was smaller than expected.

Cases of specimens were also described at this meeting by Mr. N. L. EDWARDS, Dr. A. A. GEMMELL, Dr. V. J. WOODWARD.

ROYAL ACADEMY OF MEDICINE IN IRELAND

AT a meeting of the section of obstetrics held in the Royal College of Physicians on Feb. 8th, the president, Dr. T. M. HEALY, being in the chair, Dr. A. DAVIDSON, Master of the Rotunda related a case of

Dystocia due to Cyst of the Broad Ligament

Obstructed labour due to ovarian cysts was, he said, comparatively rare and difficulty due to parovarian cyst was rarer still. The patient was 34 years of age, in her sixth pregnancy, and had had 5 full-term children. Labour commenced at 11 A.M. and the membranes ruptured at 5.30 P.M. She was seen by two post-graduates from the hospital who diagnosed an ovarian cyst obstructing labour and had her removed to hospital. Shortly after admission Dr. Davidson examined her and found her to be in good labour; on abdominal palpation the head was presenting and well pushed over to the left side of the pelvic brim, showing no attempt to enter the brim. On vaginal examination the os was 4 fingers dilated and pushed towards the left lateral fornix; the membranes were ruptured and the head could be felt free above the brim. The right lateral fornix was occupied by a tense cystic swelling the size of a grape-fruit,

which appeared to be fixed to the pelvic wall and could not be dislodged. The uterine vessels could be felt pulsating across the vaginal aspect of the tumour. Pressure on the tumour caused the patient to complain of pain running down her right leg and finally localised in the dorsum of the right foot. The same pain was felt on abdominal palpation and she had noticed it during the latter part of pregnancy, with occasional swelling of the right leg.

It was obvious that vaginal delivery could not take place under the existing conditions. When the abdomen was opened palpation revealed a cystic tumour lying extraperitoneally in the lateral fossa and attached to the lateral and posterior aspects of the pelvic wall. Both ovaries were normal. A lower segment section was performed and a living child was extracted. The incision in the uterus was complicated by very free venous bleeding. After the placenta was removed, and the uterine incision closed, the relationships of the tumour were investigated through the peritoneal incision. The ureter was felt coursing along the superior and lateral aspect of the tumour and the tumour itself was found to be of a cystic character, fairly firmly attached to the floor and the lateral and posterior walls of the pelvis. It would have been possible to have separated it, but it was felt that the amount of hæmorrhage and the difficulties entailed contra-indicated its immediate removal. It was apparently a broad ligament cyst which had extended out from between the layers of the broad ligament. The kidneys were normal.

Dr. F. DOYLE asked what would be the right course if such a tumour was found earlier in pregnancy. It was, he thought, always best in such cases to be as conservative as possible.

Dr. O'DONEL BROWNE said the fact of the fixation of the tumour was crucial. If the tumour was fixed, it ruled out the possibility of being able to push it up; if any effort were made at forcible delivery, the tumour might prove to be a dermoid and burst. It was difficult to know what a country practitioner could do in a similar case. In the case of a patient with threatened rupture, the child alive, and the cervix fully dilated, he himself would have done a version. Such tumours used to be drained through the rectum; and according to old text-books this treatment seemed to do well.

Dr. R. V. DOWSE referred to a case in which tumour complicated pregnancy. The patient, a primipara, was six months pregnant. She had a fibroid so sensitive that she could not bear her abdomen touched. It was removed and the patient went to term.

Dr. DAVIDSON in reply said that the patient had her last child three years previously; she had had no difficulty with previous confinements. If the cyst was present at all three years previously, it must have been very small; in the early stage of pregnancy it would probably not have been big enough to be felt. In one case of fibroids in pregnancy he had operated when the patient was about five months pregnant and removed large interstitial fibroids. There was severe haemorrhage, the cavity was only closed with much difficulty, and the patient miscarried. In another case he had removed subperitoneal fibroids and the patient did well. If fibroids were present in the upper part of the uterus and were interstitial or non-pedunculated he thought they should be left alone. In other cases they should only, he thought, be touched if their removal would save the patient from a Cæsarean section. In the present case he did not think that any type of vaginal delivery would have been satisfactory; the cyst was very tense, and any attempt at vaginal delivery would almost certainly have ruptured it. He hoped in about six months' time to be able to remove the tumour.

At a meeting of the section held on March 8th Dr. W. R. COLLIS read a paper on

Premature Infants and their Management

The difficulty of maintaining the body temperature of these children had, he said, been largely overcome at the Rotunda by the administration of thyroid extract. It was very difficult to keep the temperature up by external means only. The babies were nursed in electrically heated cots, the nursery itself being kept at ordinary room temperature as it was found that high temperatures interfered with the efficiency of the nursing staff. Weight curves showed that the babies on thyroid extract compared well with the control babies treated without it.

The PRESIDENT said that most obstetricians realised they had not been doing enough for babies when they were very small. Dr. Collis had mentioned that nurses did not even take the temperatures of babies when they were premature; they concentrated all their attention on the mothers. The results following the administration of thyroid were impressive and future results might be even better. He deprecated wrapping up the babies in gamgee tissue; it did not keep them particularly warm, and warmth was essential.

Dr. DAVIDSON confirmed the results gained by the administration of thyroid extract. One of the most important changes which had recently taken place in the Rotunda Hospital was the appointment of a staff nurse for the nursery.

Dr. BETHEL SOLOMONS said that nursing was the most important part of treatment in prematurity; he had always taught that heat and fluids were the keynotes of success. Thyroid extract seemed to be an excellent adjunct in producing heat. Babies of three pounds and upwards survived with good treatment. In Holland the urine of pregnant women was being used in the treatment of premature infants as the readiest way of obtaining hormones.

Dr. DOROTHY PRICE said that Dr. Collis had revolutionised in Dublin the treatment of premature babies. It was a great advantage to the pædiatrician to see the babies in the Rotunda immediately after they were born, before they had had a chance of picking up any germs.

Dr. COLMAN SAUNDERS said the chief difficulty about premature babies was their feeding. The gastric mortality was very high. Thyroid, he thought, probably acted by increasing the gastric and intestinal resistance. It was however very difficult to give enough to be really effective. The temperature should be taken from the moment the baby was born; it might be too late when it was found that the temperature was going down. He thought any baby under five pounds when born should be treated as premature.

Dr. COLLIS in replying said he did not like gamgee tissue for these babies; it was much better after they had been impregnated with oil to wrap them in a woolly shawl. He quite agreed with Dr. Davidson that the chief credit for the good work in the nursery was due to the staff nurse. These babies were always very anæmic, and many of them would die unless they were very well looked after. It was often extremely difficult to get them to take any food at all; it was often necessary to put it in with a tube. Carefully done this would not start bad diarrhœa. In Germany there was a regular trade in breast milk,

REVIEWS AND NOTICES OF BOOKS

Respiration

New edition. By J. S. HALDANE, C.H., M.D., F.R.S., Fellow of New College, Oxford; Hon. Professor of Birmingham University; and J. G. PRIESTLEY, M.C., D.M., Reader in Clinical Physiology in the University of Oxford. Oxford: Clarendon Press; London: Humphrey Milford. 1935. Pp. 493. 30*s*.

THIS new edition of Prof. Haldane's well-known work on respiration is a welcome addition to physiological literature. The subject is treated exhaustively from beginning to end in all its bearings. An historical account is given of the development of ideas on the control of breathing and the respiratory function of the blood, while the greater part of the book is devoted to consideration of respiration in its widest sense in relation to the economy of the whole organism. The sections on the effects of high and low atmospheric pressures make fascinating as well as instructive reading, and are beautifully illustrated. From a practical point of view the main message of the book hinges round the problem of anoxæmia; indeed, the authors say: "If there were only one clinical lesson derived from a perusal of this book, it is to be hoped it would be that anoxæmia is a very serious condition, the continuance of which ought to be prevented if at all possible." Many of the apparently specific effects of carbon monoxide, for instance, have been shown to be really due to the effects on the tissues of prolonged —sometimes unnecessarily prolonged—partial deprivation of oxygen. The last chapter, on air of abnormal composition, treats of a variety of subjects, including ventilation, ordinary lighting gas, air in mines, air containing particulate matter, and air in wells and tunnels and ships.

From the scientific point of view the approach to the subject is epitomised in this sentence, taken from the preface: "Respiration is thus only an aspect of the coördinated and maintained phenomena which we call life." In working out the details of respiratory processes, the authors never lose sight of the organism as a whole, and they regard the integration and coördination of such details as a fundamental conception which must be accepted and which may be used for purposes of prediction. There is no doubt that the philosophical outlook which Prof. Haldane has championed for so many years is implicitly, if not explicitly, becoming more and more acceptable to physiologists. Perhaps most of them would subscribe to the idea that even if the body could be completely presented as a series of physico-chemical mechanisms, their coördination and maintenance would still represent a peculiar and characteristic type of activity which we could only describe by a unifying term such as life. This is probably an understatement of Prof. Haldane's case, but it is clear that we must at some stage take for granted the existence of a unifying factor. Too much importance is often attached to the fact that Prof. Haldane's belief in oxygen secretion by the lungs is not accepted by several other workers. The question of oxygen secretion is one of evidence, and the most that can be said here is that the evidence is conflicting, and that in this book very cogent arguments have been adduced in support of the contention that it does occur; if this contention should be proved incorrect, however, the main thesis of the work would not be invalidated. Apart from this chapter, which deals a little one-sidedly with a controversial point, the book is authoritative in every respect, and it is safe to say that no other authors could have combined so well the theoretical and practical aspects of their most important subject.

Medicine

Essentials for Practitioners and Students. Second edition. By G. E. BEAUMONT, D.M., F.R.C.P., Physician with charge of Out-patients, Middlesex Hospital. London: J. and A. Churchill Ltd. 1934. Pp. 746. 21*s*.

THE bold venture of producing a small text-book of medicine to compete with so many bigger rivals has achieved a deserved success. It is indeed the compact nature of this work which is partly at least responsible for its popularity, for it includes all the essentials of medicine in small bulk. Moreover, its price is very reasonable, and it is well illustrated and beautifully printed on excellent paper. To read a book containing such a wealth of compressed information is not easy work, but this is a defect which can hardly be avoided. A difficult subject like nephritis, for example, cannot be clearly expounded in a short essay; the student is likely to feel almost as puzzled after reading this section as before, and even the experienced practitioner may not feel quite sure of his ability to differentiate the types in which a raised blood-urea is to be expected, or in which urea should be ordered as a diuretic. Similarly the classification of jaundice may well alarm those meeting it for the first time. These are however criticisms which are equally applicable to larger works, and it is only because conciseness and simplicity must be the two important standards in judging the smaller text-book of medicine that they are mentioned here. Dr. Beaumont has combined the new and the old in medicine and managed to shake off much that needed eliminating. He shows common sense everywhere, and his emphasis on clinical aspects of medicine is welcome in a text-book of this sort. In this edition a number of minor alterations and additions have been made, and the book is now wonderfully up to date and complete for its size.

Practitioner's Library of Medicine and Surgery

Vol. VII. *Pediatrics.* Associate editor: DANIEL C. DARROW, B.A., M.D., Assistant Professor of Pediatrics, Yale University Medical School. London: D. Appleton Century Co. 1935. Pp. 1211. 50*s*. per volume. (Volumes not sold separately).

THE presentation of an up-to-date and inclusive exposition of the practice of pædiatrics as part of a system of medicine and surgery involves a certain amount of overlapping with other sections of the general work. Many infective diseases affect adults in much the same manner as they do children, and for this reason the editors have stressed rather the nutritional factors of disease in childhood, and such conditions as tuberculosis in which there may be considerable differences in kind between the adult and childhood type of infection.

The editor courageously prefaces the volume with the statement that the "great morass of speculative matter has been 'debunked'; opinion has been superseded by established facts." The process of debunking, however, has been put into 34 different hands, and their efforts are by no means equally successful. Indeed, we suspect that some of them

have found it very much like debunking the hydra—no sooner is one head amputated than another takes its place. But the whole subject has been approached in a spirit free from traditional shibboleths, and the result is a work which is thoroughly alive. Pædiatricians in this country will welcome a symposium giving the views, in many places, of the younger Americans of many different schools, and there is no doubt that even as a work of reference, several of the sections could hardly be bettered. Unfortunately, there is occasional manifestation of a tendency to a wordiness that seems due not so much to inaccurate thought as to inadequate powers of expression. This depreciates the value of the book from the point of view of the busy practitioner, although there is a wealth of information provided for those who are prepared to sift it. The doctor in this country may be somewhat disappointed to find how little space is devoted to the use of drugs, but he will find more than adequate compensation in the description of the rationale and technique of a great variety of other methods of treatment. A curious omission is that of any mention of continuous intravenous therapy in gastro-enteritis, a method which, though of limited application, has surely justified its use in selected cases.

The production of the volume reaches a high level. The illustrations are for the most part happily chosen, although there are too many photographs of brain sections for a work essentially clinical in character. Most of the chapters are profusely documented. The project as a whole is such an ambitious one that it is high praise to say that in the main it has achieved success.

Diseases Peculiar to Civilised Man

Clinical Management and Surgical Treatment. By GEORGE CRILE, M.D. Edited by AMY ROWLAND. New York: The Macmillan Company. 1934. Pp. 427. 21*s*.

THE diseases peculiar to civilised man, according to Dr. Crile, are hyperthyroidism, neuro-circulatory asthenia (the D.A.H. of war-time medicine), peptic ulcer, and diabetes. They are not due to infection, climate, food, or muscular work; therefore their basis must be in man's racial history. In the zoological past certain animals seem to have become extinct because the overdevelopment of one organ handicapped them hopelessly in the struggle for existence; thus the sauropod dinosaurs died of gigantism, and the weight of the antlers of the Irish elk bore him down to extinction. This phenomenon of continuing variation in a fixed direction, even when that direction is racially disadvantageous, may also be seen in the human species. Man's brain and thyroid are developing, while his special senses, teeth, muscles, and digestive organs are regressing from comparative disuse. With the brain and the thyroid are associated the sympathetic nervous system and the adrenals to form a kinetic system, which by initiating and transforming energy drives the rest of the body—and much of the outside world as well. That system has lifted man into his pre-eminence in nature, and now threatens by its restless hyperactivity and unbalanced overdevelopment to drive him to destruction. The signs of his yielding are the four disorders named above, with one or two less common ones like Raynaud's disease.

Such, in brief, is the thesis developed by Dr. Crile in the first part of this book. His thought is exuberant, his style vivid and clear; and he is quite uncritical. The next section argues that treatment of the "hyperkinetic" disorders should aim at diminishing the influence of the brain-thyroid-sympathetic-adrenal system over the rest of the body, and that this can be done by denervating the adrenal glands. The technique of the operation is described. There follows a series of case reports occupying more than half the book, purporting to show that the operation produced improvement or cure in most of the three hundred odd cases in which it was performed at the Crile clinic; but if the cases have been assessed with the same undiscriminating enthusiasm as characterised the opening argument, we should prefer to look to more critical sources for practical confirmation. The book is worth reading for the stimulation which some of the ideas and arguments will certainly provoke, but as a guide to treatment it scarcely inspires confidence.

Ideal Health

Third edition. By ALEXANDER BRYCE, M.D., C.M., D.P.H. Bristol: John Wright and Sons, Ltd.; London: Simpkin Marshall Ltd. 1935. Pp. 340. 5*s*.

THIS book deals with food, drink, work, exercise, rest, air, cleanliness, clothing, regularity and moderation, the influence of the mind on the body, and eugenics. Stress is laid upon the physiological basis of the practice of hygiene, whether personal or corporate, and the views put forward are mostly orthodox. In this edition the material has been brought up to date, although the discussion of ventilation is hardly in accord with modern thought. In so far as it is possible for one writer to cover the very wide field of sciences upon which the book touches, the work has been well done. Discussions on such matters as baldness, as to the prevention of which the author has definite views which can hardly be substantiated, and prescriptions of remedies and prophylactics might have been omitted. Many scientific works are mentioned but no accurate references are given; phrases like "recently" or "a few years ago" are not helpful to any student who might wish to consult the writers quoted.

This book is intended for all who are interested in the preservation of health and is therefore written in simple language, but the author hopes that it may be useful to teachers of personal hygiene and students of medicine.

Spectrum Analysis

Clinical and Pathological Applications. By Dr. WALTHER GERLACH and Dr. WERNER GERLACH. London: Adam Hilger Ltd. 1934. Pp. 143. 14*s*. 6*d*.

THE application of spectrographic methods of analysis to biological problems has been delayed because of unsuitable methods of exciting luminosity. Using the so-called high-frequency method, in which high-frequency oscillations in one circuit are transferred by induction to a second oscillatory circuit containing the spark gap used for the analysis, the authors have succeeded in obtaining an insight into the distribution of metals in organic samples. The great advantage of this method is that the most important requirement of spectrum analysis, the avoidance as far as possible of any chemical reagents, is fulfilled. The laborious task of extracting minute amounts of metals by chemical means, with the constant danger of introducing extraneous impurities, is thus avoided. The high sensitivity of spectroscopic analysis renders possible the examination of a

piece of tissue, fraction by fraction, so that not only is the presence of the metal proved, but its distribution throughout the organ may be visualised. Using the "method of homologous pairs of lines," in which known quantities of a second metal are added to the tissue for comparative purposes, a quantitative method has been elaborated. The authors are so confident of their technique that the histochemical and spectrographic methods of other workers are discussed and their limitations and fallacies laid bare.

The greater part of the work deals with the application of spectrum analysis. This section is not confined to clinical and pathological applications, as the title of the book suggests, but includes mineralogy and geochemistry. The authors suggest that the study of the distribution in the body of heavy metals administered in therapeutic doses should prove interesting, since in the case of gold they found a certain specificity of the metal for tuberculous tissue.

Tuberculosis in the Child and the Adult

By FRANCIS MARION POTTENGER, A.M., M.D., F.A.C.P., Clinical Professor of Medicine (Department of Chest), University of Southern California, the School of Medicine. London: Henry Kimpton. 1934. Pp. 611. 36*s*.

"Believing that it is the duty of specialists now and then to give back to the general profession an epitome of the knowledge that they have acquired," Dr. Pottenger set himself the task of concentrating the results of many years of study and practice within the limits of a single volume, intended primarily for the use of students and young practitioners. Special attention has been given to what the author describes as major problems in the study of tuberculosis, to childhood infection, to the reactions of the body towards infection, and the part that immunity reactions play in diagnosis; but every aspect of pulmonary tuberculosis has been carefully considered in a work which represents a survey of the whole field. Dr. Pottenger is no apologist for the use of classical methods in clinical examination, but though he rightly condemns those whose zeal for scientific methods of investigation leads them to neglect the more important study of the patient, he attaches a significance to the finer details of physical examination which to the modern student may seem somewhat exaggerated. His claim that the practice of palpation if diligently pursued will result in such an exquisite sensitiveness of finger that even the large bronchi and blood-vessels and the hilar densities can be detected when in their normal conditions might create a feeling of despair in the student who compares the results of his most careful clinical examinations with the shadows of pathological conditions as revealed by radiograms. It is difficult to credit the statement that by light-touch palpation it is possible to feel deep within the thorax; and feel so accurately as to be able to translate the perceived data, not only in terms of greater or lesser density, but also into terms of clinical pathology with remarkable precision. Even if such skill were possible of attainment, the average student could not hope to achieve it in the time at his disposal, or the practitioner to employ it in his daily practice.

The chapters devoted to therapy are excellent, and the student will find here all that he requires for the treatment of the various forms of the disease and of its symptoms and complications. The sections dealing with collapse therapy will form a useful guide to those who are perplexed by the optimistic claims proffered by some and the slighting references made by others to the more active forms of treatment.

The work is well illustrated by figures and skiagrams; clinical interest is maintained by numerous descriptions of illustrative cases, and the bibliography is more than sufficient.

We commend this book to the notice of British readers.

Précis d'histologie

La cellule, les tissus, les organes. By A. BRANCA and J. VERNE, Professeurs à la Faculté de Médecine de Paris. Paris: Masson et Cie. 1934. Pp. 635. Fr.50.

THE labour of producing this sixth edition has been borne by Prof. Verne. The form of the previous edition has been retained and, without adding appreciably to bulk, the various sections have been revised and brought up to date. The work aims at providing what is necessary to the student for his examination in histology and a means of revision for the post-graduate. The result is a competent and sufficiently comprehensive text-book arranged on conventional lines. It is profusely illustrated with drawings in black and white, many of which are far too small, while others are somewhat smudgy and uninspiring. It enjoys the distinction, rare in French books, of being strongly bound in cloth, but this advantage is offset by the inclusion, at the end of the volume, of 48 pages of publishers' advertisements.

JOURNALS

IL BAGLIVI No. 1, January–February, 1935, issued bi-monthly. Annual subscription: 50 lire in Italy, 100 lire abroad. G. C. Sansoni, Florence.—This is a new Italian journal dealing with all departments of medicine and appears under the direction of Dr. Gaetano Gentile. It is admirably printed. Four sound clinical essays are followed by a group of brief reviews, while the last third of the journal is taken up with abstracts from contemporary literature. These are interesting, and where they can be tested appear to be carefully done, but one may be permitted to guess that the staff employed on the work are not familiar with the English language. A foreword brings to modern notice an Italian savant whose name does not occur in medical literature with as much frequency as might be expected, either from his ancient fame or his accomplishments. The journal is named after him.

Giorgio Baglivi was born in 1668 and received his medical education at Rome, where he came into close contact with Malpighi, whose teachings he profited by and whose autopsy he performed. He succeeded Lancisi in the chair of anatomy in 1696 or 1697, and shortly afterwards published *De Praxi Medicâ*, described in the first English translation as "the practice of physick reduced to the ancient way of observations; containing a just parallel between the wisdom and experience of the ancients and the hypotheses of modern physicians." The work was translated also into German and French at different dates, and procured for Baglivi a wide reputation and election to the Royal Society. He died in 1707, being only in his 39th year.

THE centenary volume of St. Mark's Hospital, which was reviewed last week (THE LANCET, March 30th, p. 756), is published by Messrs. H. K. Lewis and Co., Ltd., London, price 30*s*.

THE LANCET

LONDON: SATURDAY, APRIL 6, 1935

REHABILITATION AFTER INJURY

Dr. H. H. KESSLER, who is head of the Rehabilitation Commission at Newark, New Jersey, told the Royal Society of Medicine on Jan. 15th, that after attending a rehabilitation centre most disabled workers were able to go back to the work they had done before. He made an exception, of course, for major amputations. A rehabilitation service was, he said, available in 44 of the American States; all of them provided vocational training for the civilian disabled. The State of New Jersey was unique in offering surgical and medical rehabilitation as part and parcel of the workmen's compensation unit; it was supported out of the rates and taxes at a cost of about 50,000 dollars a year. In this unit an assessment of disability was made by the State physician and the referee put the stamp of legal approval upon it. The county court method of adjudicating claims had been tried in the State; it had proved inadequate and was given up. Dr. KESSLER's visit to this country was of necessity a brief one, but he brought with him a film giving a vivid picture of the rehabilitation work done in New Jersey, and this film has been shown several times since he left, including a demonstration last week at Bush House to a select audience of people especially interested in physical disablement, including orthopædic surgeons, representatives of insurance companies and trade-unions, and Mr. GEOFFREY PETO who has special parliamentary experience.

It is a curious thing that there should be in the home counties no training centre for adult cripples, and this is the more remarkable as it was the work of the Lord Roberts memorial workshops which suggested the idea to Dr. KESSLER. There is actually no place where crippled persons whose disability precludes them from being absorbed into industry in the normal way can become fitted to do so by suitable training. There are of course places such as Enham Colony at the service of the war cripple, and it was, we believe, the design of the promoters of Enham to put its facilities at the disposal of civilian industrial cripples when its primary object was achieved. The omission is however now being made good to some extent at the Cripples' Training College at Leatherhead Court, the scheme for which was launched at a Mansion House meeting in March, 1934, and which is to be formally opened in June next. Here the primary object is not vocational training. What the trainees are offered is fundamental practice in electro-mechanical technique as carried out under industrial conditions, concurrently with the assembly and manufacture of articles related thereto on a commercial basis; thus they can learn to adapt themselves to the physical limitations imposed on them by their disablements. At present a charge of 35 shillings per week is being made, but it is hoped to reduce this figure after the first year's running.

The object of Leatherhead Court, as of the rehabilitation centres in the States, is to get the insured man back to his work as soon as possible. How little this is now the case was brought out two years ago at the Liverpool Medical Institution.[2] when Dr. H. E. MOORE, surgeon to the L.M.S. Railway, produced evidence showing that many railway men who had met with accidents might have returned to their former occupations after brief periods of time if their treatment had been adequate. His figures showed long periods of incapacity amongst men whose active treatment had ceased before they were fully restored, and it was pointed out in the discussion that attempts to curtail the unemployable period, or to reduce ultimate disability by coöperation, were met with the reply from the employer "We are insured" and with the reply from the insurance company "We are covered." That is unfortunately one effect of the Workmen's Compensation Acts as at present administered in this country, and everyone present at the Bush House meeting agreed that this was the case. As the B.M.A. Committee on Fractures stated, our compensation Acts, although humane and beneficial in many respects, contain no provision for rehabilitation after injury, and have in many cases played a powerful part in prolonging the injured man's disability. The provision of light work for the disabled or convalescent man presents almost insuperable obstacles. The man himself is often afraid to take up work that might prove too much for him, and it is no wonder that to-day, with so much unemployment, there is a tendency to nurse invalidity as an alternative means of subsistence. An actual incitement to the prolongation of disability is provided in the lump sum form of compensation. The B.M.A. Committee had before them evidence that solicitors' touts wait on accident cases to promote profitable litigation, and the improvement is often amazing in the condition of a man, who has been long kept wondering what amount of compensation he would get, when the lump sum is paid. These crippled men are apt to drag on in misery partly because of the variety of agencies from which they can obtain certificates of disability, and partly because, as things are, our insurance companies are interested primarily in compensation and not in rehabilitation. There are some five Government departments concerned and since everybody's business is nobody's business, there is no initiative towards the great national scheme required to re-administer the workmen's compensation laws in the interest of speedy recovery. Employers fear that the man who has had one accident is more likely to have another, and they have been recently intimidated by a decision that an employee who comes to them with the results of a previous accident and has another will make them liable for both. It is in the interests of all parties to reconsider the present state of affairs

[1] See THE LANCET, Jan. 19th, p. 151.

[2] THE LANCET, 1933, i., 86.

if only on the ground of economy, for it is admitted that in this country 37 per cent. of the premiums disappear in administration, whereas in New Jersey 5 per cent. is sufficient to run the scheme. We wish well to the Leatherhead scheme and trust that it will serve not only as an object-lesson but as a stimulus to general inquiry.

THE METABOLISM OF VIRUSES

By the application of new techniques and the refinement of old ones the viruses are in many respects being brought into line with other forms of organised life. The larger viruses such as vaccinia, ectromelia, or psittacosis, which are big enough to contain between five and ten thousand protein molecules, appear to be more nearly related to living than to non-living systems. It is still difficult to conceive of the mode of life and pathogenic action of the really small viruses such as foot-and-mouth disease, which has a diameter only about four times that of serum albumin. In this search for more precise knowledge about the viruses, M. SCHLESINGER [1] and H. SCHÜLER [2] studying the chemical composition and metabolism of one of the larger bacteriophages, have obtained results of great interest. They have grown the phage WLL on a strain of *B. coli* No. 14 which itself was growing on a synthetic lactate phosphate medium. The phage was grown for 48 hours, during which time no visible lysis appeared. The bacteria were then filtered off through paper and the filtrate was concentrated by passage through a collodion membrane. The phage remained on the membrane and could be recovered quantitatively. The concentrated suspension was then centrifuged for three minutes at 15,000 revolutions per minute and the supernatant fluid taken and centrifuged again for half an hour at the same pace with 1½ c.cm. per tube. The second sediment was drained, washed with distilled water, and used as the phage preparation. Rabbits injected with such preparations gave no serum agglutinins for the organism on which the phage had been grown, but they did produce antilytic antibodies. The activity of such preparations was tested on *B. coli* No. 88. SCHLESINGER has investigated the chemical composition of the phage. The elementary analysis gave C 42 per cent., H 6·4 per cent., N 13·2 per cent., P 3·7 per cent.; this roughly corresponds to the composition of a nucleo-protein. Washed centrifuged phage preparations gave positive Millons and biuret reactions, but a negative Molisch test, indicating the absence of carbohydrate. The activity of the preparations may be judged by the fact that 1·0 mg. dry weight of washed centrifuged phage corresponded to $2{\cdot}3 \times 10^{12}$ active phage particles.

SCHÜLER has used the methods elaborated by SCHLESINGER to investigate the metabolism and enzymes of this coli phage. In most of the experiments 1·0 mg. dry weight of phage was used, but for the experiments on respiration and fermentation up to 17·5 mg. were obtained. SCHÜLER found, using the delicate manometric method of Warburg, that the oxygen uptake and the carbon dioxide productions of even such large amounts of phage were well below the experimental error. If dead bacteria were added to the medium the result was not affected. Nor did phage in amounts not causing visible lysis produce any change in the oxygen consumption of living susceptible coli. SCHÜLER then investigated the hydrolytic enzymes, trypsin, papain, lipase, amylase, maltase, nucleosidase, urease, arginase, and phosphatase. Of all these, phosphatase was the only one found to be present in the phage suspension. This phosphatase hydrolyses hexose diphosphate, nucleic acid, hexose monophosphate, and glycerophosphate. The enzyme seems to have the same general characteristics as phosphatases from tissues and bacteria. The pH optimum is pH 8·5 and the action is inhibited by inorganic phosphate, the inhibition being greater at low substrate concentrations than at higher. Unlike tissue phosphatases the enzyme is not inhibited by fluoride, which does inhibit lysis of bacteria by phage. SCHÜLER found that well-washed phage deposit did not hydrolyse organic phosphates, but that the addition of the supernatant washings restored the hydrolytic power. He therefore postulates a co-enzyme. The reasons for considering that the enzyme is a constituent of phage itself rather than a fragment of the bacteria of the same size as, or adsorbed on to, phage are (1) that a culture of the *B. coli* contains only a very weak phosphatase, and (2) that the amount of enzyme runs roughly parallel to the number of phage particles present. One mg. wet weight of phage hydrolyses 500–1000 γ P_2O_5 per hour at 37° C. and pH 8·5 with 1·0 per cent. hexose diphosphate as substrate. Concentrated bacterial filtrates show only very slight phosphatase action. Since no visible lysis took place during the growth of the ofphage the author concludes that it is unlikely that the phosphatase in the sediment is an internal enzyme of the bacterium which manifests activity only after the disruption of the organism. It is unfortunate that he has not included in his controls the phosphatase activity of the sediment obtained from *B. coli* No. 14 after lysis by something other than phage. The quantitative relationship between the enzyme activity and the number of active phage particles present make it more probable that the enzyme is in fact a constituent of the phage itself; but this does not exclude the possibility that the parallelism between phosphatase activity and the amount of phage present is due to a quantitative adsorption of an intracellular bacterial phosphatase on to the phage particles.

This work is one of the first published accounts of a study of the metabolism of an organism in the submicroscopic class similar to the viruses. A less limited though still small range of enzyme activity was found by B. E. HOLMES and A. PIRIE [3 4] using the organisms of bovine pleuro-pneumonia and agalactia. In both these organisms only one strong dehydrogenase, that for lactate, could be demonstrated. Centrifuged organisms differed from phage in that they had a measurable respiration in the presence of lactate, and in the case of pleuro-pneumonia a

[1] Biochem. Zeits., 1933, cclxiv., 6; Ibid., 1934, cclxxiii., 306.
[2] Ibid., 1934, cclxxvi., 254.
[3] Brit. Jour. Exp. Path., 1932, xiii., 364; ibid., 1933, xiv., 290.
[4] Biochem. Jour., 1934, xxviii., 411.

fermentation of glucose and other sugars was well known to take place. The viability of the organisms ran parallel with the enzyme activity, and such treatments as exposure to methylene-blue and light which destroyed the one invariably destroyed the other. It is interesting to speculate on the part played by the phosphatase in the lysis of the bacterium and the growth of the phage. F. M. BURNET [5] has shown that one phage is adsorbed by the specific flocculable substance of the susceptible organism and that after adsorption it can no longer lyse fresh susceptible bacteria. In addition, susceptibility to phage among coliform organisms is related to antigenic structure. It may be that the breakdown of the specific flocculable substances is an essential part of the lysis of a bacterium, and that the phage phosphatase helps to bring this about. It would be interesting to know if the phage used by BURNET contains phosphatase and, if so, what effect the addition of specific flocculable substance had on its activity.

The continuation of SCHÜLER's work should bring interesting results. BURNET and W. J. ELFORD have shown that bacteriophages are of many different sizes, and the next step will be to discover how widespread among them is the phosphatase and how far the enzyme activity is correlated with the power to effect lysis. The new methods of attack given by the high speed centrifuge and carefully graded membranes hold out hopes that the way is now open for a vigorous attack on the problem of the way in which viruses obtain the energy necessary for growth.

ST. DUNSTAN'S

IT is exactly 20 years since the late Sir ARTHUR PEARSON began his work for war-blinded soldiers, sailors, and airmen at a house in the Outer Circle of Regent's Park, whose name is now almost a synonym for the care of the blind. Nearly 2000 blinded men and their families are still under the care of St. Dunstan's, and it is distressing to learn that even at this late date there are new admissions. The nineteenth annual report informs us that 19 new cases were admitted during the year, 5 of whom were blinded by the delayed effects of gas poisoning. The house in Regent's Park is no longer the heart of the organisation, and for that reason, perhaps, there is a chance of St. Dunstan's dropping a little out of the public eye. Any falling-off in support would be a disaster, for the average age of the men is 45 and the youngest is only 33. The administrative headquarters are housed in a building, originally a group of workshops, in the Inner Circle of Regent's Park, and the sales department for articles made by St. Dunstan's men is in Kentish Town. But the training centre is now to be found in the large convalescent and holiday home at Brighton, the gift of the Federation of Grocers' Associations of Great Britain. Here the beginners learn their new occupations and the old patients return for refresher courses or for holidays. The matron, who knows every one of the 2000 personally, is hostess to this large floating population. In one part of the building are wards for totally disabled blinded men who will require institutional care for the rest of their lives.

Most of the old patients of St. Dunstan's are now out in the world earning their living. Their occupations range from shopkeeping and basket-making to poultry farming, boot-making, and carpentry. The St. Dunstan's roll also includes a chartered accountant, a professor of languages, three clergymen, a barrister, a solicitor, and the director of an engineering firm. One keeps a road house. In moments of difficulty old patients find in St. Dunstan's an adviser, encyclopædia, and repair works rolled into one. Medical advice is available for those who are ill; legal advice for those who are in difficulties about National Health Insurance or a disputed right-of-way; financial troubles may be overcome by a judicious grant. Each man has a Braille watch, a wireless set, and a typewriter, all kept in repair by St. Dunstan's. The recreations of blinded men are not as limited as outsiders are apt to think. Many are fond of swimming, and others find the proper competitive flavour in walking matches. Rowing and physical jerks are available for Londoners, and at Brighton some enjoy practice in kicking at goal, which seems to show how deep the passion for Association football goes among British people. Some are keen gardeners. Cards and dominoes are usual pastimes, and the St. Dunstan's Band has even been broadcast in the National programme. Probably the most remarkable achievement of a remarkable organisation is that of maintaining the spirit of good fellowship which prevailed during the war into the carping times of peace.

[5] Jour. Path and Bact., 1934, xxxviii., 285; Ibid., 1934, xxxviii., 301.

THE PRE-SCHOOL CHILD

IN opening, from the chair, a discussion at the annual meeting of the National Baby Week Council on March 27th, Dr. G. F. Still said there was need for some better term than "pre-school" child to define the child between the ages of 2 and 5 years. An infant of 6 months old was in some sense a pre-school child, and at 5 years some children had already been attending school for two years. Local authorities did not lack powers to care for pre-school children; the point at issue was how far those powers were being exercised. It was, no doubt, more difficult to provide for their welfare than for that of the school-children, and yet the years from 2 to 5 were fraught with the gravest influences on the child's well-being, influences related not only to physical but even more closely to mental and moral health. He had a profound belief in the value of day nurseries and nursery schools as places where children at a plastic age unconsciously learned order and discipline. Certainly the pre-school age was an age of frailty; the actual risk to life was greater in the three years of pre-school life than in the subsequent school years. In some districts the number of deaths occurring in children between 2 and 5 years of age had been actually greater than in the whole ten years from 5 to 15. He noted the high prevalence of tuberculosis, of respiratory diseases, and specific fevers during the first five years of life. Some of these factors were being combated, and against one of the worst the use of dried and pasteurised milk was a powerful preventive. If a larger supply of milk was to be made available for these children, it should be in the form of pasteurised milk.

ANNOTATIONS

THE INCIDENCE OF TUBERCULOSIS AMONG STUDENTS

THE example set by America and Germany in the matter of large-scale systematic medical examinations of students is being followed by several other countries. Spain and Denmark are among the latest converts to this system. Prof. L. Sayé[1] of Barcelona has recently given an account of such examinations, which were introduced as a compulsory measure at the end of 1933 with the object of discovering tuberculosis in an early stage. Since then 584 male and 53 female students have been examined, and of the 33 found to be tuberculous, as many as 26 had been ignorant of their disease. The comparison made in the course of these examinations between radioscopy and radiography was definitely unfavourable to the former, which in several cases had failed to indicate lesions demonstrable by radiography. When Prof. Sayé's observations were discussed by the French Academy of Medicine, the consensus of opinion was emphatically on the side of radiography. Prof. Bezançon and Prof. Sergent refused to be impressed by unsupported radiological findings and insisted on the balanced judgment which depends on a careful marshalling of all the evidence, including the results of clinical examination. In Denmark, Dr. J. Holm[2] has conducted tuberculin surveys of students with Mantoux's test pushed to 1 mg. of tuberculin. His examination of several hundred medical students showed that the percentage of positive reactions among them rose from 70 per cent. at the commencement of their studies to 98 per cent. towards their close. This rise in the proportion of reactors was not so great in the other faculties, and the deduction that the work of the medical student is more favourable to the development of tuberculosis than that of the other students seems to be justified. Dr. Holm concludes from his investigations that, while only 2 per cent. of all the students in Copenhagen suffer at the present time from active tuberculosis, 10 per cent. of the senior medical students have an active infection.

DIPHTHERITIC PARALYSIS

PARALYSIS of the eighth cranial nerve in diphtheria is rare. Kourilsky, Baruk, and Aubry[3] recently reported to the Paris hospitals medical society a case with bilateral vestibular signs. The mild primary angina had not been treated. They attributed the successful outcome to serotherapy instituted after the paralysis was established. This report stimulated other observers to record another such case; it also provoked renewed discussion on the value of antitoxin in the treatment of diphtheritic paralyses in general. A month later Marchal, Soulié, and Grupper[4] described a case of diphtheritic polyneuritis with involvement of the right auditory nerve. Antitoxin alone failed to affect the condition. Inspired by the technique employed in tetanus, they combined serum treatment with general anæsthesia, and noticed rapid improvement. And at the same meeting of the society Duvoir, Pollet, Kreis, and Greene[5] reported a similar case which had, for a time, been under their care and with which they had lost touch. It transpired that both sets of observers had been reporting the same case. From the two accounts a complete record is available. Fortified by Kourilsky's success, M. J. Comby,[6] an old advocate of serotherapy for paralysis, reiterated his belief in its value and included in his communication the recorded successes. G. Ruelle,[7] on the other hand, is convinced of the futility of the method, and finds support for his scepticism (1) in the impossibility of evaluating treatment on clinical evidence alone, because of the tendency to spontaneous recovery; (2) in Roux's dictum that the action of antitoxin is like that of water in a fire—it prevents spread but does not repair damage; (3) in experimental work rendered possible by the new method devised at the Pasteur Institute by Ramon, Debré, and Uhry[8] of producing diphtheritic paralysis in animals with modified toxin. Using their technique Ruelle[9] investigated various methods of treatment employed in the human subject. He concludes, as did the Pasteur Institute workers, that antitoxin has no curative action on paralyses; nor has toxoid, anæsthesia, urotropine, sodium salicylate, potassium iodide or the oleate, oleo-ricinate or taurocholate of sodium. In a further study[9] Ruelle satisfied himself that paralyses may appear when the blood contains a high content of antitoxin and when the amount is actually increasing. He shows that the fixation of toxin to the nervous tissues occurs early, and that the production of antitoxin after this in no way influences the subsequent appearance or duration of paralyses. Experimental support is thus provided for the general opinion of clinicians in this country, who believe that no known therapeutic measure—physical, chemical, bacteriological, or serological—can directly influence the nervous lesions.

SPECIALIST OBSTETRIC SERVICE

INVESTIGATIONS carried out in recent years in this country by the Departmental Committee on Maternal Mortality, and in America by the New York Academy of Medicine, furnish evidence that about half the maternal deaths might be avoided if, as Dame Janet Campbell puts it in a newly published pamphlet,[10] "the necessary professional competence, the clinical facilities, the material aid, and the intelligent coöperation of the patient were available always." During the discussion on maternal mortality in the House of Commons on March 25th, Dr. O'Donovan pleaded that, before the country embarks on a widespread scheme of gynæcological clinics, the medical profession shall produce competent gynæcologists—"men with trained first-class brains"—to man them. The word clinic, he said, may cover a multitude of incompetencies, and Dame Janet follows the same line of thought when she states that a national maternity service is only likely to raise the standard of midwifery, and to reduce the toll of avoidable accidents if a selected corps of workers can be induced to participate in the scheme. While there has been steady growth both in the number of antenatal clinics throughout the country, and in the attendances made, it does not appear that there has been any appreciable effect on the maternal death-rate as a whole, though in certain selected medical and hospital practices, where the supervision is carefully organised and thoroughly

[1] Bulletin de l'Académie de Médecine, 1935, No. 6, p. 232.
[2] Ugeskrift for Laeger, Feb. 14th, 1935, p. 202.
[3] Bull. et mém. de la soc. méd. des hôp., 1934, lviii., 1706.
[4] Ibid., 1935, lix., 52.
[5] Ibid., 1935, lix., 55.
[6] Ibid., 1934, lviii., 1756.
[7] Bruxelles-méd., 1934–35, xv., 213.
[8] Ann. de l'Inst. Pasteur, 1934, lii., 5.
[9] Ibid., 1935, liv., 185.
[10] Maternity Services. By Dame Janet Campbell, M.D. Faber and Faber Ltd. March, 1935. Pp. 56. 1s.

carried out, excellent results have been obtained. But these practices, Dame Janet says, are exceptional, and in many places the quality of work has not kept pace with its extended scope, and a good deal of it has been "partial, insufficiently skilled or inefficient." Antenatal care has, admittedly, been less successful than its advocates hoped, and in consequence there has been a certain reaction against it; but it is not the principle which is at fault, but its application. The first great service rendered by antenatal clinics was to demonstrate the need for supervision of pregnancy alike to doctors, nurses, midwives, and the general public. They still form a valuable type of institution and one capable of expansion, but the medical officer in charge of every such clinic should be a skilled obstetrician closely in touch with practical midwifery, and some arrangement should be devised to prevent such overcrowding that a doctor is asked to deal with more patients at a session than he can attend to adequately. Dame Janet calls attention to the fact that, although all registered medical practitioners are entitled to practise in every branch of the healing art, it is generally recognised that those practising in certain special departments are expected to furnish definite criteria of skill and competence. She suggests that one of the greatest contributions which the profession could bring to the solution of the maternal mortality problem might be to insist on post-graduate training, and evidence of special study and experience on the part of doctors intending to make midwifery an integral part of their practice.

TYPHOID DUE TO SHELL-FISH

AN attack on the hygienic shortcomings of the French shell-fish industry, made by an expert bacteriologist, contains information on the hygienic problems of shell-fish not to be found elsewhere. Dr. Belin's[1] interest in the subject was aroused by a tragedy in his own family following the eating of oysters. In attempting to assess the justice of the charges allowance must be made for the bitter sense of grievance, but the picture he paints carries a certain degree of conviction, enough to cause any reader who is not very courageous or very gluttonous to forswear oysters when on his next visit to France. According to Dr. Belin, no serious attempts are made in France to render safe the consumption of shell-fish. In the Mediterranean region in particular, the conditions of culture and sale are said to be unsatisfactory in the extreme. In the commune of Marseilles (654,000 inhabitants) alone, Dr. Belin estimates the number of cases of typhoid ascribed to the consumption of shell-fish is upwards of 2000 a year, and he says that the incidence falls particularly heavily upon visitors who have had no opportunity of acquiring environmental immunity. Dr. Belin's bibliography is full but by no means complete; there is no reference, for instance, to Timbrell Bulstrode's classical report of 1911 (vide THE LANCET, April 22nd, 1911, p. 1089).

It is interesting to reflect that we import a considerable number of French oysters into this country. These oysters, so far as London is concerned, are subject to the very thorough bacteriological and general control of the Fishmongers' Company, and on the whole prove a satisfactory product. It is obvious, therefore, that French cultivators catering for the English market cannot fairly be held to deserve the strictures which Dr. Belin levels against French cultivators in general. Beyond the special supervision of the London markets by the Fishmongers' Company, the regulations for the control of the sale of shell-fish are by no means comprehensive. They consist of a brief set of regulations set up by the Public Health Acts, and they make no provision for preventing the importation of contaminated shell-fish throughout the country as a whole. The vigilance of the Fishmongers' Company, combined with these regulations, however, appears to have ensured an almost complete immunity from outbreaks of enteric due to shell-fish in this country. One of the few remarks of Sam Weller which has failed to stand the test of time is his observation of the "wery remarkable circumstance that poverty and oysters always seem to go together"; this, alas, appears to be no longer true in Great Britain. It is consolation, nevertheless, to know that if we pay dearly for our oysters we can eat them in safety.

[1] Coquillages et Fièvres Typhoïdes, un Point d'Histoire Contemporaine. By Dr. Ve M. Belin, Director de l'Institut Bacteriologique, Tours. Paris: Les Presses Universitaires de France. 1934. Pp. 230. Fr. 15.

AN EIGHTEENTH CENTURY STUDY OF THE BRAIN

IN 1882 a work on the brain by Emanuel Swedenborg was published, having been translated, edited, and annotated by Dr. R. L. Tafel from the original Latin MS. written between 1741 and 1744. It has now been reprinted under the auspices of the Swedenborg Society[1] and is well worth attention. The picturesque nomenclature of the eighteenth century is not the least of its attractions. The editorial annotations are of help in the interpretation of the work, and must obviously have involved a great deal of patient and learned research into the anatomical and physiological literature available at the date of publication. The peculiar genius of Swedenborg was, at the period of his life when this book was written, directed primarily into philosophical and physiological, rather than into anatomical channels. This is shown throughout the work by the constant endeavour to discover the functions of the brain and its appendages. The method used by the author was not that of original experiment, but rather of analysis of and deductions from the anatomical facts which were known in his day, combined with a study of pathological cases. He deliberately abandoned experimental research because, to use his own words: "I find when intently occupied in exploring the secrets of the human body, that as soon as I discover anything that had not been observed before I begin (probably seduced by self-love) to grow blind to the most acute researches of others, and to originate the whole series of inductive argument from my particular discovery alone"—a quotation that might not inaptly be displayed in research laboratories to-day. His method was one of induction, and shows remarkable originality of thought and outlook. Swedenborg's knowledge of contemporary anatomical knowledge was profound; but he never regarded it as an end in itself, only as a means to arrive at an explanation of the functions and mode of working of the brain. He based his physiological theories on the most minute examination of the form and relations of the parts of the brain, and some of the results he obtained are certainly striking. For example, he ascribes the motor areas of the brain to the positions now known

[1] The Brain. Considered Anatomically, Physiologically, and Philosophically. By Emanuel Swedenborg. Second Impression published by the Swedenborg Society. London. 1935. In Two Volumes. Vol. I.: The Cerebrum. Pp. 794. Vol. II.: The Pituitary Gland, Cerebellum and Medulla Oblongata. Pp. 645. 15s. per volume.

to be the correct ones, even to the relative positions of the areas controlling the head, arms, trunk, and lower limbs. He also locates the intellectual faculties to the frontal region of the brain. In common with many philosophers of his time, he was much troubled about what part of the brain was occupied by the "soul"; he discarded entirely the theory of Descartes, largely held at that time, that the "soul" resided in the pineal body, but ascribes it rather to the cortex of the brain. From an analysis of the minute structure, as then known, of the pituitary gland, he was led to ascribe to it functions of the utmost importance in the composition of the blood, and, in fact, calls it the "arch-gland" of the body. He devotes many pages to the study of the motion of the brain, and draws the conclusion that respiratory motion is that proper to the brain itself; the pulsatile motion he regards as being primarily derived from the vessels of the dura.

INFANT MORTALITY-RATES IN VARIOUS COUNTRIES

A SOMEWHAT surprising characteristic of the decline which has been recorded in the infant mortality-rate in all European countries is an accentuation of the differences between one country and another. This feature is clearly shown in a study of infant mortality by K. Stouman, former chief statistician of the Health Section of the League of Nations Secretariat.[1] The explanation of this increased variability lies no doubt in the fact that the fall began at different periods in the various countries, and is progressing with different rapidity. Stouman sees no reason why stabilisation, when it finally approaches, should maintain the extreme national individualism now shown. At present, however, there are no signs of stabilisation, and the fall continues even in countries where the rates are lowest. Also the statistics of several countries in recent years show some improvement in the neonatal mortality, in which so far very little has been achieved. International comparisons of the neonatal mortality-rate are peculiarly difficult to make owing to the differences in definitions and registration systems. Stouman takes stillbirths and infant deaths under 1 month to represent together "birth mortality" and finds a much smaller range of variability in Europe than with the rate at 1–11 months. The former rate, he suggests, is related chiefly to vitality, the latter to surroundings, and surroundings are more subject to change than is vitality. One effect of the greater decline in the rate in the second six months of life is an increase in the excess of the male over the female mortality-rate—for the male excess is greater in the first six months of life and must grow larger as the proportion of early deaths increases. Thus a rise in the male excess may be taken, Stouman suggests, as a sign that the "selective" forces in a country (those determining mortality in the first month) are gaining on the "destructive" forces (those determining mortality at 1–11 months). In England and Wales the infant mortality-rate is appreciably higher in the towns than in the rural areas. This is not, however, a general feature of infant mortality. The rate is now lower in towns in most of Central Europe—in the Netherlands, Belgium, Bavaria, and Switzerland particularly. Statistics from Holland, Denmark, and the United States show that the rural excess is at its maximum in the second and third months of life. It seems to be at this point of infant life, Stouman remarks, that the greatest achievements have been realised by the more active health services of the large towns. It follows that the health services of rural districts, as well as of large towns which are still somewhat behind in this respect, would do well in directing their attention toward the problems connected with infant life during these critical months.

[1] Quart. Bull. of the Health Organisation, December, 1934.

NITROGEN RETENTION AT THE ONSET OF SCARLET FEVER

THE renal complications of scarlatina fall into several categories. At the height of the fever albuminuria is encountered in a considerable proportion of patients, it is usually benign, and it is even doubtful whether it can properly be considered an index of true involvement of the kidney. Focal nephritis, characterised by intense hæmaturia and a benign course, occurs rarely, also during the period of fever. The classical acute nephritis of scarlatinal origin is usually encountered towards the beginning of the third week of the disease; Barasch in an analysis of 121 examples, showed that 90 of them had their onset in the third or fourth week of the disease. Suppression of urine sometimes occurs at the very outset of scarlet fever, especially in the more malignant types of the disease; usually fatal in the severer cases, it may subside completely after a few days, it is doubtful whether this complication is a true nephritis or whether it represents an arrest of the renal circulation from purely nervous causes.

Recent work suggests that nitrogen retention, without gross alteration of the volume of urine secreted, and often without albumin in the urine, occurs in a proportion of all cases of scarlet fever. This interesting fact has been closely studied by A. Lemierre.[1] At the Hôpital Claude-Bernard in Paris they have observed in 49 cases of scarlet fever of varying degrees of severity a normal blood nitrogen or a mild degree of elevation of the blood nitrogen falling to normal after several days. In 8 cases the blood-urea was raised to about 60 mg. per 100 c.cm. at the onset of the disease and fell below 50 in from two to four days, but in 4 other cases the blood-urea was found considerably elevated, in the region of 100 mg. at the outset, and rose in several of them to a figure of nearly 300, falling slowly from this figure to return to normal after some weeks. During the period of observation these cases were passing an approximately normal amount of urine from which albumin was completely absent or demonstrable merely as an occasional minimal trace; the blood pressure was not raised and the only other outstanding facts were dryness of the tongue, a tendency to vomiting and diarrhœa, and a condition of prostration with occasional mental excitement out of proportion to the general condition of the patient. All these cases cleared up spontaneously, although recovery was delayed in two of them, and careful tests of renal function during convalescence showed that the kidney emerged without permanent impairment. On the question whether these cases should be considered as examples of nephritis or whether they merely represent some form of extra-renal nitrogen retention Prof. Lemierre is very guarded. He recalls that oliguria is almost universal at the onset of scarlatina, and that this by itself may be an index of renal insufficiency; the virus of scarlatina, like other toxins, provokes to some extent a breakdown of the proteins of the body tissues, and

[1] Maladies Infectieuses: Leçons cliniques professées à l'Hôpital Claude-Bernard. Par A. Lemierre, Professeur à la Faculté de Médecine de Paris; Membre de l'Academie de Médecine. Paris: Masson et Cie. 1935. Pp. 498. Fr. 60.

this circumstance will also tend to increase the blood nitrogen. There are therefore several factors tending to produce the phenomenon he has studied. But even though it is very possible that this nitrogen retention is evidence of a purely functional disturbance it remains a strong indication for a low protein diet at the onset of the disease, combined with an abundance of water. Prof. Lemierre holds also that the salt-intake should be strictly regulated, since his observations indicate that the elimination of sodium chloride by the kidney is definitely interfered with during the febrile period.

ROYAL MEDICAL BENEVOLENT FUND

THE annual general meeting of the Royal Medical Benevolent Fund was held on Wednesday, March 27th, at the rooms of the Medical Society of London, Sir Thomas Barlow presiding. The report for the year ending Dec. 31st, 1934, was read and adopted, and its contents showed real progress. There was during 1934 an increase of income of £1676, while 869 new subscribers were enrolled—both figures constitute a record. The number of persons directly connected with the medical profession who were individually helped during the year was 670, and there was paid out by the Fund in quarterly, monthly, or single payments during the period £18,415. The particulars concerning many of the beneficiaries are stated from time to time in our columns, proving the existence of the Fund to be vital. "At present," says the report, "their needs can be met only by an annual grant of £40 to a medical practitioner and £26 to a dependent. Not until the Fund has the full support and sympathy of every member can the profession feel confident that misfortune in its own ranks can be adequately dealt with by this medical charity." All who read the details of individual cases helped, as they are recorded in our columns, will see how often the help granted is insufficient to the needs. So we would endorse with emphasis the words quoted from the report. The Fund does admirable work directly, and by means of its Ladies' Guild, through which organisation personal service is given in the shape of the allocation of medical comforts, gifts of clothing and coal, pecuniary grants and arrangements for holidays; the Guild indeed brings to the beneficiaries of the Fund most valuable succour.

The centenary of the Fund will occur in 1936, and we learn from the report that careful consideration is being given by the committee of the Fund as to the manner in which the occasion should be celebrated. The committee believe that it would be the unanimous wish of the profession that no application should be made in any form to the public for assistance but that, as in the case of the benevolent funds of other professions, the appeal should be made only to members of the profession. This is an attitude which should commend itself to all of us, and affords a most forcible argument for further subscriptions to the charity, for until the Fund has a full backing by the medical profession recourse to public benevolence can with difficulty be justified. We therefore bring to the notice of our readers the following facts: the Royal Medical Benevolent Fund meets urgent needs; its money is distributed upon careful scrutiny and with every practical expression of sympathy; it is not duly supported; records exist only to be broken; the secretary of the Fund, Mr. E. C. Pennefather, M.B.E., can be addressed at the office of the Fund, 11, Chandos-street, London, W.1, and his acknowledgments are made by return of post. If this were being written in America it might well end "Attaboy"; one may translate the picturesque expression into the phrase, "Please subscribe and subscribe quickly."

HYDATIDIFORM MOLE

A FORTNIGHT ago we reported a meeting of the obstetric section of the Royal Society of Medicine at which Mr. Alan Brews described a study of 72 cases of hydatidiform mole admitted to the London Hospital since 1912. Almost coincidently comes a study of 78 cases by J. T. Sherman,[1] and the two series may profitably be compared. The writers agree that the cause lies in the ovum rather than its environment; and Brews describes a twin pregnancy consisting of a normal placenta and fœtus and also a hydatidiform mole. In some respects, however, there is a profound difference in the findings. Thus Brews notes that 37 per cent. of his cases were in women over forty, whereas of Sherman's series only 10 per cent. were above that age. Again, Sherman states that chorion-carcinoma very rarely follows hydatidiform mole, but as only 12 of his patients were followed up and one of these developed it, his evidence cannot be held adequate. Brews, who was able to trace all but 17 of his series, found that no less than 6 cases, or 8 per cent., developed chorion-carcinoma. The mortality was low, about 2 per cent., in both series, and treatment was uniformly conservative in that whenever possible the uterus was allowed to empty itself. In a substantial proportion of cases (Sherman 7 per cent. and Brews 20 per cent.) the uterus was observed to be smaller than would have been expected from the probable duration of the pregnancy—a finding contrary to the usual text-book description. Both investigators report a high incidence of toxæmia (about 1 in 3) and both emphasise the value of the Aschheim-Zondek test as an aid to diagnosing the condition itself and as a means of excluding the subsequent growth of a chorion-carcinoma. Other observers (see p. 812) have found the test capricious.

On Wednesday afternoons, from April 24th to June 26th, at the Institute of Medical Psychology, Dr. H. Crichton-Miller and Dr. Cedric Shaw are lecturing on problems relating to psycho-physical adaptation. The address of the institute is Malet-place, London, W.C., and further information may be had from the secretary. These lectures constitute an introductory course for practitioners.

THE firm of Hodder and Stoughton, the proprietors of THE LANCET, has never taken in a new partner or a new director other than direct descendants of the founders of the firm, Matthew Henry Hodder and Thomas Wilberforce Stoughton. Mr. R. Percy Hodder-Williams (the present chairman of the firm) and his brother, Mr. Ralph Hodder-Williams, announce that they are now appointing to the directorate two of their nephews, Paul Hodder-Williams and John Attenborough, great-grandsons of M. H. Hodder, the original senior partner of sixty-seven years ago.

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[1] Amer. Jour. Surg., 1935, xxvii., 237.

QUEEN CHARLOTTE'S MATERNITY HOSPITAL.—Owing to the demand on the accommodation of this hospital in its present building in Marylebone-road, it has been decided to press on with the work of building the first wing of the new hospital at Ravenscourt-park. The cost of the first stage will be £60,000.

PROGNOSIS

A Series of Signed Articles contributed by invitation

XLVI.—PROGNOSIS IN GENERAL BIRTH INJURIES

In the course of parturition some trauma to the female birth passages is almost unavoidable; usually this is slight and little or no appreciable discomfort follows, but in some cases the injury is grave and may produce varying degrees of disablement or even death.

The prognosis as regards the future health and fitness of the mother in such cases is influenced by many factors, of which the type of treatment adopted is of the first importance. It is this aspect of the matter that will be considered here.

DAMAGE TO PELVIC FLOOR

Damage to the pelvic floor is one of the most common of these lesions and the most usual variety is laceration of the perineum. The prognosis depends mainly on whether the perineal body and the levator muscle are injured and whether the laceration is promptly and properly sutured. It is not possible to perform a proper repair unless a good light is available and unless the limits of the laceration are clearly demarcated. If the laceration has involved the deep structures, a layer of deep interrupted sutures should be inserted in the first place. Merely to suture skin and mucosa will give no support however neat the wound may look. If this be done, even if some breaking down should subsequently occur, a strong perineal body will eventually result, as the perineal tissues have the faculty of progressive healing for several weeks. Immediate suture is especially necessary if the laceration has extended into the anal canal, otherwise rectal incontinence may ensue. In some apparently complete repairs everything may heal except a small fistulous communication a little way up the posterior vaginal wall, which may cause only an occasional leak of flatus or liquid fæces with corresponding social inconvenience. In this case a subsequent plastic repair is necessary, and in experienced hands nearly always gives satisfactory functional results.

REMOTE EFFECTS

The results of perineal damage may manifest themselves only in later years, at and after the menopause, by the occurrence of various degrees of pelvic floor weakness and prolapse. While the degree of probability of the occurrence of prolapse long after parturition cannot be foretold in any individual case, it is certain that the main predisposing factor to such an event is failure to effect repair of such tissues of the pelvic floor as may be damaged at that time.

The question arises whether a repaired perineum is likely to break down at future labours. The answer is that if the conduct of such labours is unhurried, in over half the cases no further laceration need be anticipated. Should it occur it can be resutured, but admittedly if this has to be done on several occasions the perineal tissues tend to become progressively weakened, with the corresponding probability of subsequent prolapse. In this connexion it has to be remembered that the perineal tissues may be stretched and weakened even in normal labour, without any surface laceration. In such cases the probability of prolapse later is considerable and nothing can be done to prevent it. In cases seen in later years when the various varieties of pelvic floor weakness—cystocele, rectocele, or prolapse—have developed the best prognosis lies in a properly planned repair operation. Only when consent is withheld or some contra-indication to operation is present should pessary treatment be advised. Pessaries cannot effect a cure of prolapse; they are mere vaginal mechanical supports which cause irritation and discharge and call for douching and periodical changing while they are often ineffective.

The type of operation required naturally varies according to the local condition, but in a complete prolapse treated by the Fothergill-Donald operation failure should occur in not more than 2 per cent. of cases (Fletcher Shaw), so that the prognosis as regards increased future comfort and efficiency is excellent.

RUPTURE OF VAGINA

Rupture of the vagina apart from perineal laceration usually occurs in the upper part of the postero-lateral wall. It is almost always due to undue force on the part of the attendant and may be associated with laceration of the cervix. The prognosis is grave on account of the peritoneum being opened, with prolapse of loops of bowel into the vagina. In half the cases the patient is too shocked to allow proper suturing and the best that can be done is to cleanse the vagina and the prolapsed bowel and to pack firmly.

Seventy-five to eighty per cent. of these cases die of peritonitis within three days from the effects of trauma and associated sepsis.

LACERATION OF THE CERVIX

Some laceration of the cervix occurs in practically every full term labour and the late results of this lesion constitute about 70 per cent. of all cases seen in gynæcological clinics. Such laceration is usually slight in normal labour, but as the result of manipulations, especially with an imperfectly dilated cervix, deep lacerations may be produced extending up to the vaginal fornices and possibly involving the base of the broad ligaments. It is often said that the slighter degrees of cervical laceration heal spontaneously and are of no account (Whitridge Williams); but modern obstetric opinion does not favour this view. On account of trauma, muscular separation of the lips of the laceration, and superadded infection the lesion, however small, hardly ever heals but produces the common condition of chronic cervicitis with its numerous extensions and symptoms.

In all cases, then, of even slight laceration the prognosis as regards future symptoms and possible disablement owing to parametritis, metritis, or salpingo-oöphoritis may be serious, and when it is remembered that it is on the traumatised cervix that carcinoma is engrafted in later life, it is evident that in a certain small proportion of cases the prognosis is very grave. It is, however, impossible to prophesy which individual will do badly. Adequate prophylactic treatment is made difficult by the impossibility of suturing every small surface laceration after labour; a deep laceration can and should be sutured either then or some ten days later, but extensive lacerations are not common and are no more likely to be followed by chronic infective symptoms or by carcinoma than is a small and apparently unimportant tear. It cannot be over-emphasised that the prognosis in these cases depends not at all on the extent of the

original laceration; the degree of trauma and subsequent infection are the important factors and can seldom be estimated at the time of labour.

INVERSION OF THE UTERUS

Inversion of the uterus is only rarely encountered even in hospital practice. In the last ten years I have seen only six cases. It may occur spontaneously but more often there has been excessive kneading of a slack uterus with a patulous cervix; traction on the cord is often quoted as a cause but it does not appear to have been associated with most of the recorded cases.

Prognosis is influenced by several factors:—

(1) The *acuteness of the condition.*—Should inversion occur before or immediately after the expulsion of the placenta shock is marked. Hæmorrhage may also be severe but the degree of shock has no relation to the amount of bleeding. Should the inversion not appear for several days the element of shock may be slight or absent with a correspondingly improved prognosis.

(2) The *supervention of sepsis.*—Should sepsis occur the outlook is usually bad, and as one of the main causes of this condition is strangulation of the inverted fundus by cervical constriction it is certainly to be feared.

(3) The *method of treatment.*—In general the uterus should be replaced in position under anæsthesia as soon as possible, but in extremely shocked patients such manipulation may only increase the shock already present and may be fatal. Nice judgment is required in determining the proper course of action, and the prognosis is greatly influenced by the wisdom of the obstetrician in charge of the case.

In general, the prognosis has been improved in recent years by better obstetrics; thus J. G. Crosse in 1843 reported 109 cases with 80 deaths, while the present mortality can be reckoned at 14 to 20 per cent. (R. D. Maxwell, P. Findlay, L. Beckmann). W. Zangemeister found that reposition within 1 to 24 hours after the inversion yielded the best results. Of our six cases in Cardiff all were replaced without difficulty, but two died, one of shock and one of sepsis.

RUPTURE OF THE UTERUS

Rupture of the uterus may occur in late pregnancy either spontaneously or through the scar of a previous Cæsarean section; it is then usually in the upper uterine segment. More often it occurs in prolonged and obstructed labour due to thinning of the lower uterine segment, and then the rupture is in the lower part of the organ. The prognosis for the mother is always grave and is influenced by the liability to shock, hæmorrhage, and peritonitis. The sooner laparotomy is performed, the fœtus and placenta removed, and hysterectomy performed, the better the outlook. If operation is undertaken within two hours of the rupture a case-mortality rate of under 40 per cent. may be anticipated, while after that interval the rate is fully 75 per cent. The nature of the rupture also influences the prognosis. In the complete variety into the peritoneal cavity a death-rate of 70 per cent. is to be expected, while in the incomplete variety, in which the rupture may not be through the peritoneum or may be into the base of the broad ligament, hæmorrhage is not so free and the mortality ranges from 15 to 20 per cent. Unsuccessful and traumatic attempts at delivery in obstructed cases influence the prognosis adversely by the production of bruising and laceration, with corresponding predisposition to subsequent sepsis. According to J. B. de Lee the prognosis in these cases depends on so many conditions that figures are practically valueless; in his series of 18 cases of complete rupture 11 died, while in 19 cases of incomplete rupture only 3 died. These and similar figures quoted by others are in general agreement with the prospects stated above. The fœtus is practically always dead, only three live cases having been reported.

FISTULÆ

That fistulæ are not common nowadays demonstrates, in spite of all that may be said to the contrary, improvement in present-day obstetrical practice. They usually occur after prolonged labour, and are produced by too prolonged pressure of the presenting part on a localised area of vaginal mucosa with subsequent sloughing; less commonly they are produced directly by instrumental perforation.

Rectovaginal fistulæ usually occur in the lower part of the vagina and represent an unhealed area in the upper part of a previous complete perineal tear; much more rarely they occur in the upper vaginal mucosa. The tendency in a rectovaginal fistula is always in the direction of healing, so that fully 30 per cent. will close spontaneously if given time. Operation therefore is not advisable within three months from parturition. When it is required, it usually takes the form of a complete perineal repair including the fistula and, with proper technique, fully 80 per cent. of such cases heal at once; in the upper vaginal fistulæ a plastic operation usually suffices, and only rarely is separation and suture from above by laparotomy required. It has to be remembered that even should the fistula break down after operation, the tendency to healing will remain so that in a few weeks over 50 per cent. of the cases will heal by granulation.

In *vesicovaginal fistulæ*, on the other hand, the conditions are reversed. The fistula is continually bathed in urine which may be infected, and the lips tend to become epithelialised so that spontaneous healing is not to be expected, and indeed occurs very rarely. A plastic repair operation is practically always necessary, and the likelihood of a breakdown with recurrence of the fistula is so great that cure cannot be promised. A number of operations may be necessary before the fistula is closed. Operation should be deferred until the edges of the wound are clean; the presence of bruising, of infected urine, or of phosphatic deposits on the fistula inevitably presage operative failure. The prognosis is influenced by the number of previous operative failures; thus A. Apajalahi found healing in 60 per cent. of cases after the first operation, in 30 per cent. after the second operation, in 24 per cent. after the third, and in 10 per cent. after the fourth operation, while no cases healed after the fifth operation. A review of statistics collected by Simon, Frank, Bey, Saenger, and others shows between 70 and 80 per cent. of operative cures in these fistulæ, but in the hands of those who are not specialists in this work not more than 50 per cent. of cures is to be expected.

CONCLUSION

It will be seen from what has been said how diverse may be the results and effects of genital birth injuries, and how multiple are the factors which influence us in arriving at a prognosis; also that the choice of appropriate treatment has an important influence on prognosis. The advantages of prevention over even the most satisfactory cure of any such injuries is obvious.

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SPECIAL ARTICLES

MEDICINE AND THE LAW

Damages for Negligence against Osteopath

THE award of £1500 damages against an osteopath last week (in Smith *v.* Lowry) shows once more the danger of ignoring the resources of X ray photography. The allegation of negligence against Captain Lowry, the defendant, was that in manipulating the left leg of the child Sheila Smith, he fractured the neck of the femur and caused a permanent restriction of the left hip. There was evidence that the child suffered previously from displacement of the left hip which an X ray photograph would have revealed, and that manipulation which would cause no injury to a normal child might fracture the thigh of a child suffering from displacement. Thus, as the judge observed to the jury, the taking of the photograph would have warned an operator that the patient needed to be handled carefully.

Captain Lowry lost his sight at Neuve Chapelle in 1914. He was the first blind man to qualify as a masseur from St. Dunstan's, and he has practised as an osteopath since 1925. He claims with justification to have developed a remarkable sense of touch. It was not suggested that his disability of sight caused the injury to the plaintiff. There was considerable conflict of testimony on matters of fact, but there was indisputable evidence in the form of radiograms. For seven weeks in July and August, 1930, Sheila Smith was under treatment at the Royal Free Hospital; a radiogram taken at this period showed a displacement of the right hip bone. Captain Lowry operated upon Sheila in August, 1931; a radiogram taken next day showed a fracture of the neck of the left thigh bone. There was no explanation of the fracture except that it occurred during Captain Lowry's manipulation. There was medical evidence that the girl is now crippled for life from the combined effect of the fracture and the earlier displacement.

The story of the mother was that Sheila had some form of rheumatism and had put on weight. Having read that Captain Lowry had cured a girl of over-weight, the mother took Sheila to see him. She said—though this he strongly denied—that he ridiculed the doctors' diagnosis of rheumatism, that he spoke of mistakes made by clever surgeons in London, and that he declared there were no signs of rheumatism but merely a slight dislocation of the left hip and a twisted intestine; this he said he could put right by a very slight operation. There was great conflict about the child's ability to walk. Seven witnesses said she could walk perfectly well; the girl herself said she went for a walk before the operation and climbed unaided on to the operating table. On the other hand, Dr. H. Chodak Gregory of the Royal Free Hospital was clear that Sheila had a noticeably "waddling" gait in 1930, and Captain Lowry's secretary noted on Sheila's case-card that the child was carried into his house for the operation in 1931 with great pain in her left leg. On August 25th the operation proceeded under an anæsthetic. The mother said she was present and heard a cracking sound, after which Captain Lowry remarked "that was a funny noise"; Captain Lowry denied this and said the mother was not present. There was apparently no dispute that the child was taken home in great pain, that the mother twice telephoned anxiously to Captain Lowry next day, and that he sent a radiographer to the Smiths' house and later sent a surgeon (Mr. Noel St. J. D. Buxton of King's College Hospital and the Royal Waterloo Hospital), whose subsequent treatment of the patient involved placing her in a plaster-of-Paris splint for three months and an operation in the following February to correct the position of the neck of the right hip bone. Captain Lowry also sent his wife to see Mrs. Smith soon after the radiographer's results had disclosed the fracture. The plaintiff apparently relied on some of these incidents as indicating that the defendant was conscious of unsuccessful treatment; they were equally explicable as manifestations of ordinary sympathy. Captain Lowry's version differed from Mrs. Smith's. He said that nothing untoward occurred while he was manipulating the patient's limb; that he used no violence but was merely making an examination; that he required an anæsthetic for the examination because the child was nervous; that he broke off his examination and told the anæsthetist that it was a case for a surgeon; that he was not at all perturbed about Sheila afterwards, and that he sent a surgeon to examine her out of kindness of heart, offering to waive his own fees and to pay the surgeon's fee, which Mrs. Smith could repay him later. In summing up to the jury, Mr. Justice Talbot observed that, if Captain Lowry's evidence was correct, certain passages in the evidence for the plaintiff must have been fabricated. The verdict of the jury indicates the belief that Captain Lowry caused the fracture and that he was at fault in doing so.

SIDELIGHTS ON THE CASE

Among other features of the case, not perhaps of special relevance to the jury's task, it may be noted that Captain Lowry, an unqualified practitioner, employs a duly qualified anæsthetist. As a general rule, he stated in his evidence, it was unnecessary to use anæsthetics in osteopathy. He was asked in cross-examination if it was within his knowledge that the British Osteopathic Association had constantly complained of his use of anæsthetics. He replied that it was untrue. In opening his defence his counsel stated that Captain Lowry was not going to expose his anæsthetist to disciplinary proceedings by calling him as a witness. Captain Lowry would sooner lose the case than let down the medical practitioner who has trusted him. Captain Lowry would not even disclose the doctor's name unless compelled by the court; he had the name in a sealed envelope and would hand it to the judge if so compelled. This was perhaps a forensic flourish of no great importance. Captain Lowry had doubtless given personal undertakings against disclosure to any registered practitioner who, with his eyes fully open to the risk, assisted an unqualified man. The court was not likely to compel the defendant in a civil action to call any witnesses whom the defendant for whatever reason decided not to call.

Captain Lowry's own status and qualifications were explained by him in the witness-box. He had attended lectures on anatomy at Middlesex Hospital and St. Thomas's Hospital while studying massage. He had not attended any lectures on surgery. He had formerly been a member of the British Osteopathic Association, but had retired after being summoned before that body to explain the appearance of his name in a newspaper. He had, it seemed, differed from the Association as to his right to advertise a book which he had written entitled, "From Mons to 1933." He was a member of the Incorporated Society of British Osteopaths. He denied that he had recently claimed, in lectures in America, the development of a sixth sense which

enabled him to diagnose cases which medical men failed to diagnose. Mr. Justice Talbot, in summing up to the jury, said that Captain Lowry had evidently held himself out as having considerable skill; along with such claims went the duty to use care. The judge did not fail to express the admiration which all will share for the courage and success with which Captain Lowry, after losing his sight in his country's service, has addressed himself to a fresh career.

The case will no doubt be studied in relation to the legislative proposals for the recognition of osteopathy now under examination by a committee of the House of Lords, and reported in our Parliamentary columns.

Dangers of the Calender

That the possession of a calender machine may be a serious liability to a mental hospital was disclosed in an action tried by Mr. Justice Horridge on March 20th. A former employee in the laundry of the Goodmayes Mental Hospital, administered by the West Ham Borough Council, was awarded £695 damages and costs for injuries due to insufficient fencing, contrary to the provisions of the Factories and Workshops Acts, of the calender on which she was working. A calender is a wringing machine with hot rollers, which irons clothes as it dries them. Hitherto, in designing safety-gear, the makers and users seem to have assumed that the danger-point is the rollers. To prevent an employee's hand from being caught in these, the calender is fitted with a kind of shutter a few inches high, which extends across its whole width, and guards the approach to the rollers. The employee places the folded wet clothes on an arrangement of moving tapes which carries them beneath this guard to the jaws of the rollers; an incautious hand travelling with the clothes must press the guard back, and a movement of about an inch operates a trip mechanism which stops the machine. The story of how, in spite of this device, the laundry-maid sustained a broken little finger and extremely bad burns, necessitating the amputation of the little finger with its metacarpal bone, makes solemn reading for mental hospital governors. The employee saw a nightdress going in with one of the sleeves inside-out; she put her hand in to straighten the sleeve, but by this time the lower part of the sleeve had passed under the guard and was in the rollers; the sleeve tightened round her hand and she could not withdraw it. The guard of this machine, instead of being perpendicular, curved inwards towards the rollers about two inches. It operated the trip mechanism after her hand had moved it about an inch but, owing to the ordinary lag in the brake of the machine, the rollers moved onwards a little over an inch more after the power was shut off, and the gap left by the guard was sufficient to allow her hand to be pulled in until the little finger went either into or very near the nipping point of the rollers. That it was broken suggests that it was actually caught. Leading to the rollers there is a narrow hot plate at about the same temperature—well over boiling point; her hand was held tightly down on to this plate by the sleeve in which it was entangled, and she suffered ten minutes of what must have been excruciating pain before she was released. The hot plate rather than the rollers, as the judge remarked, was in this case the dangerous part of the machine which was insecurely fenced, and he suggested that such accidents could be avoided if the guard were placed so far from the plate that no hand could possibly reach it before the machine was stopped. Queerly enough, the calender is one of the few exceptions to the general rule that machinery is delivered to the user unfenced; in this case—perhaps in recognition of the inherent danger of the machine—the fencing is done by the makers themselves. This does not seem to be an isolated case; accidents with those machines are no rarity. The present decision is subject to appeal, but the possibility of having to pay heavy damages for the shortcomings of the safety-gear should induce mental hospitals and other institutions to take serious thought for its efficacy in the future.

Bequest to Non-existent Hospital

It is a pity that charitably minded persons sometimes omit to identify the institutions they desire to benefit. Last week Mr. Justice Farwell was asked to decide what should be done with a substantial legacy bequeathed to "the King Edward the Seventh Royal Hospital, London," there being no hospital of that name in London. The testator, Mr. William Hurst, of Little Hulton, in Lancashire, was a retired publican who had prospered in business, and whose bequest amounted to £42,440. So far as was known, he had never visited or subscribed to any hospital in London. He had frequently expressed his admiration for the personality of King Edward VII. and, as Mr. Justice Farwell observed, he must have supposed that there was some hospital in London named after him. Four institutions filed affidavits in support of their claims for consideration; in each case the judge found some ground for rejection. The King Edward's Hospital Fund was excluded because it was not a hospital. The King Edward VII. Hospital at Windsor was ruled out because it was not in London. The same objection was fatal to the King Edward Memorial Hospital at Ealing. The King Edward the Seventh's Hospital for Officers (founded by Sister Agnes) was a London hospital, but not a general hospital. Having thus disposed of the various claimants, the judge withdrew from the court to enable the parties to reach a settlement. Besides the four institutions already named, the next of kin was represented by counsel and, since he is officially interested on behalf of the public, the Attorney-General also appeared. On the judge's return to court it was stated that, subject to the deduction of a certain sum and the estate duty thereon which it had been agreed should be paid to the next of kin, his lordship would be asked to direct a scheme in Chambers for the administration of the fund. Mr. William Hurst, we must suppose, made his own will. It would have been the duty of his legal adviser, had he employed one, to see that the objects of his charitable intention were specified with certainty.

SCOTLAND

(FROM OUR OWN CORRESPONDENT)

EDINBURGH UNIVERSITY

AT a meeting of the university court of the University of Edinburgh, the court and senatus resolved to present an address to the King on the occasion of the celebration of the Silver Jubilee. The court also agreed to grant permission to the Corporation to make arrangements for the flood-lighting of the dome of the Old College on the occasion of the celebrations. The principal, Lord Blackburn, and Sir Norman Walker were reappointed as the university representatives on the curators of patronage for the period to Nov. 30th, 1937.

The court approved the regulations for the award of the Shaw Macfie Lang fellowship in 1936. This fellowship, of the annual value of £215 and tenable for two years, will be open for competition in June,

1936, to graduates who have taken the degrees of M.B., Ch.B., with honours, in any of the four Scottish universities at a date not more than five years previous to July, 1936. The successful candidate will be required to undertake research work approved by the faculty of medicine. The court also approved of the establishment of a Sharpey Schafer lectureship in physiology, a fund for the endowment of this lectureship having been contributed by pupils and friends of the late Sir Edward Sharpey-Schafer. The first of the lectures, which will be given biennially, will be delivered in the summer term of 1935.

AN INSTITUTION FOR MENTAL DEFECTIVES

Dr. R. D. Clarkson's devoted work as medical superintendent of the Royal Scottish National Institution for Mental Defectives at Larbert is much appreciated in Scotland. Dr. Clarkson has for many years emphasised the need for a colony for *adult* defectives, and it is gratifying to know that such a colony has now been established under his supervision. At the annual meeting held recently he said that the report submitted was one of the most satisfactory in the 75 years of the institution's existence. The new adult colony will meet what has always been one of the great needs of the mental defective, for there are many, who after being trained to a certain extent, cannot be suitably provided for in their own homes and yet cannot be allowed to go out into the community. For these people the work on the farm and in the workshops of the colony affords an opportunity of feeling that they are doing some work that is worth doing, and it gives them a sense of satisfaction they cannot get in any other environment.

Dr. Clarkson does not think there is any adequate evidence that mental deficiency is increasing; he does not think there are any more mentally defective persons to-day than there were when he began his work forty years ago. He considers it cruel and inaccurate to maintain that mental deficiency is hereditary. Very few of the parents of the patients in the Larbert Institution are certified defectives. John Thomson, Leonard Findlay, and Charles M'Neil have all, he holds, proved that heredity plays only a small part in the ætiology of mental deficiency, and Dr. Clarkson is quite certain that a very large proportion of the cases are caused by injury to the brain at birth.

INFLUENZA IN 1934

A report published by the Department of Health for Scotland on incapacitating sickness in the insured population for the year ending June, 1934, analyses information extracted from medical certificates received by all approved societies operating in Scotland. Incapacities attributed to influenza numbered only 35,652, whereas the figure for the twelve months ending June, 1933, was 109,462. There was also a decrease in the incidence of bronchitis and pneumonia, but a definite increase in the amount of incapacity attributed to tonsillitis, scarlet fever, erysipelas, diphtheria, acute and subacute rheumatism, and superficial septic and inflammatory conditions. A striking feature of the statistics is the reduction of incapacitating illness among married women. In the past three years there has been an annual average decline of some 2000 cases of incapacitating diseases and this reduction does not apply to single women and men.

THE NATIONAL HEALTH

The report of the Department of Health for 1934, which has just appeared, shows a death-rate lower than any on record—namely, 12·9 per 1000. The principal causes of death were heart disease (11,427), cancer (7558), cerebral hæmorrhage (6618), pneumonia (4533), and tuberculosis (3704). The infant mortality-rate was 78 per 1000 registered births and is the lowest recorded. The birth- and marriage-rates showed a slight increase on those for the previous year, but the birth-rate is about half what it was sixty years ago. The maternal death-rate was 6·2 per 1000 live births, and is slightly higher than during the previous year.

More houses were contracted for and put in hand than in any year since State-aided housing began in 1919, and the output of completed houses in 1935 should be exceptionally high. An investigation was conducted by the Department to ascertain the views of tenants of local authority houses in the suburbs of large towns on the relative advantages of life in suburban and central areas. The views of 500 families were taken, and 429 families declared in favour of suburban as against city life. Consideration for the children was the outstanding reason for this preference for the suburbs, and a number of wives spoke of improvement in their husband's habits and sense of domestic responsibility. The most frequently expressed objection to living in the suburbs was that of travelling expenses, particularly where young boys or girls have to pay a large proportion of their small wages in fares.

The Department have watched for any evidence of the effects of unemployment on health. They could find no marked manifestation of ill-health or actual physical disease attributable to unemployment, but an abnormal prevalence of nervous conditions among unemployed men is reported. These nervous conditions tend to subside after long periods of unemployment.

EDINBURGH MATERNITY HOSPITAL

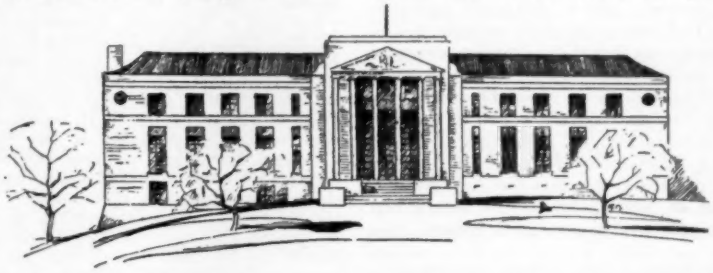
The Edinburgh Royal Maternity and Simpson Memorial Hospital held its 90th annual meeting last week. During 1934 the number of cases, intern and extern, treated by the hospital totalled 3500, and the visits to the antenatal and other clinics numbered 17,210. Of all the births in Greater Edinburgh during the year, 43·7 per cent. were dealt with in connexion with the hospital. As in previous years, the expenditure was greatly above the income, and the reserve fund had to be drawn upon to the extent of £3143.

WARRINGTON INFIRMARY AND DISPENSARY.—The finances of this institution have improved during the past year and the waiting-list of patients has been reduced from 330 to 180. Over 200 patients have passed through the nursing-home, which provides accommodation for 25 patients, private and semi-private, at fees ranging from three and a half guineas to five guineas. The cost per occupied bed in the infirmary was £143 2*s*. 8*d*. in 1934 as against £141 10*s*. 7*d*. in 1933.

ROYAL WATERLOO HOSPITAL.—The 119th court of governors of this hospital was held at the Mansion House on March 18th. Sir Stephen Killik, Lord Mayor of London, who presided, said that till the London County Council decided on its programme of development in the area to the south of Waterloo Bridge nothing could be done in the matter of the hospital's new out-patient department. During the past year 15,490 new out-patients who had been treated registered 80,747 attendances. The hon. treasurer said that the accumulated deficit of the hospital had increased to £4845 during the year. Dr. Gerald Slot spoke of pioneer work lately done at the hospital on the gold treatment of rheumatism.

ROYAL AUSTRALASIAN COLLEGE OF SURGEONS

On the afternoon of March 4th the door of the College's new building at Melbourne was opened by Sir Holburt Waring, P.R.C.S. Eng., with a golden key given to him by Mr. L. F. Irwin, the architect. Sir Henry Newland, president of the college, took the chair at the meeting which followed, when Sir Holburt read messages of congratulation from the King and from the Royal College of Surgeons of England. Sir Henry Newland expressed thanks to Sir Stanley Argyle, the premier of Victoria, and to Mr. Hogan, a former premier, for granting the College the lease of the site at an annual rental of £1. In reply, Sir Stanley announced that the surrounding gardens were to be maintained by the city council and that he had been asked to name them College Gardens. An address entitled How Surgery came to Australasia was then given by Sir D'Arcy Power, another of the visitors from England.



In the evening Sir William Irvine, lieutenant-governor of the State of Victoria, opened the eighth annual meeting, and reminded his listeners that on the last occasion when he had done so, in 1932, Mr. C. H. Fagge had presented the silver mace which he had brought from the Royal College of Surgeons of England as a gift from brothers to brothers. Sir Henry Newland proceeded to confer the honorary fellowship of the College on Sir Holburt Waring and Sir D'Arcy Power (representatives of the Royal College of Surgeons of England), Mr. Henry Wade and Prof. J. Fraser (of the Royal College of Surgeons of Edinburgh), Dr. D. C. Balfour (president-elect of the American College of Surgeons), Dr. Dean Lewis (professor of surgery at the Johns Hopkins Medical School, Baltimore), Mr. C. F. M. Saint, F.R.C.S. (professor of surgery in the University of Cape Town), and Mr. F. Wood Jones, F.R.C.S., F.R.S. (professor of anatomy in the University of Melbourne). Sir Holburt afterwards presented the Jacksonian prize of the Royal College of Surgeons of England for 1933 to Dr. E. S. J. King, of Melbourne.

Prof. Wood Jones, delivering the third George Adlington Syme oration, spoke on the Great Master Surgeon, a type which, he said, specialisation and improved technique had, since about 1850, made less easy to recognise. He believed that though anæsthesia and asepsis had now made surgery comparatively easy and safe for all competent operators, the inspired master did exist to-day though he might be hidden among the many.

From March 5th to 8th scientific meetings, discussions, and demonstrations were held, including lectures by Dr. Balfour (the surgical treatment of duodenal ulcer), Prof. Edward Archibald (the operative treatment of pulmonary tuberculosis), Mr. Henry Wade (renal tumours), Mr. S. Harry Harris (posterior segmental block-excision of the bladder-neck with primary closure), Dr. Dean Lewis (ovarian hormones and their relation to breast tumours), Sir Louis Barnett (deaths from hydatid disease), Prof. John Fraser (lipoid disease of bone). A discussion on post-graduate education in surgery was opened by Sir Holburt Waring, Prof. Saint, and Mr. Alan Newton, and a report on the results of the treatment of carcinoma of the breast was presented by fellows of the College.

HISTORY OF THE COLLEGE

The formation of an Australasian College of Surgeons was suggested by Sir Louis Barnett in 1920 in a letter to the section of surgery of the Australasian medical congress which was being held at Brisbane; but the proposal was rejected. In 1924 Dr. William J. Mayo and the late Dr. Franklin Martin visited Australia and offered the fellowship of the American College of Surgeons to some of the leading Australians. When the newly elected fellows attended the next annual meeting of the American College they were impressed by the importance of its work, and on their return decided to revive the proposal to found a corresponding institution in Australia. After preliminary meetings a conference of delegates from the chief Australian States and from New Zealand was held in Sydney in August, 1926, and a provisional executive committee was elected which drew up a constitution for the new college. The first annual general meeting was held at Canberra in 1928 under the presidency of the Lord Stonehaven, the governor-general of Australia. Sir John Goodwin, F.R.C.S., the governor of Queensland, and Mr. Victor Bonney, who attended the meeting on behalf of the Royal College of Surgeons of England, were elected the first honorary fellows of the College. Sir George Syme was its first president; when he died in 1929 Sir Henry Newland was elected in his place, and it has recently been announced that Mr. R. B. Wade of Sydney has been elected to succeed him as third president.

The last years have seen a rapid growth. In 1930 the King granted the College permission to prefix Royal to its title and this was followed by a grant of arms. In 1931 it was decided to erect headquarters, and it was agreed that this should be situated in Melbourne. The building which has just been opened is free of debt and has been designed so that future extensions can be readily undertaken. It occupies a central position in Melbourne, standing near the University, while the Melbourne Hospital, the Children's Hospital, the Women's Hospital, St. Vincent's Hospital, and the Eye and Ear Hospital are in the same neighbourhood, and the Alfred Hospital, Prince Henry's Hospital, and Queen Victoria's Hospital may easily be reached by tram.

In 1931 and in 1934 the Australasian College coöperated with the Royal College of Surgeons of England in holding the primary fellowship examination of the English College in Australia, and it is hoped that examinations may be held in Australia and New Zealand at regular intervals. The friendly intercourse was continued when Mr. C. H. Fagge, on his visit in 1932, delivered the first George Adlington Syme oration and was made an honorary fellow. Last year Mr. Gordon Gordon-Taylor, who went to Melbourne as an examiner in anatomy for the

primary fellowship examination, received a like honour.

As the possession of a senior surgical qualification is one of the requirements for the fellowship the College has been able to obtain uniformity in the regulations governing admission to senior surgical degrees of the Australian universities. A period of surgical apprenticeship is also an essential part of the training for the fellowship, and the College has therefore asked many of the large hospitals of Australia to create non-resident positions as assistants to indoor surgeons which are intended for men who have already been house surgeons and who wish to continue their surgical training with a view to becoming fellows. An agreement has been made with the Prince Henry's Hospital, Melbourne, whereby this hospital will function as a post-graduate school of surgery in collaboration with the College.

Application for admission to the fellowship of the College is made to the censor-in-chief who presides over two boards of censors, one in Australia and one in New Zealand. The censor-in-chief considers the qualifications of each applicant—a senior surgical qualification and a period of surgical apprenticeship are essential—and if he thinks fit asks the candidate to present himself to the appropriate board of censors for an oral examination. Fellowships with ophthalmology and laryngo-otology have been instituted and are governed by similar regulations. The original system of admission to the fellowship was somewhat different, and the revised system was introduced in 1934.

Soon after its formation the College founded a journal which has been published quarterly since 1928, at first under the title of the *Journal of the College of Surgeons of Australasia*, and since 1931 under the name of the *Australian and New Zealand Journal of Surgery*. The journal is edited by a committee under the chairmanship of Mr. H. B. Devine.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg. Comdrs. A. G. Bee to *Drake* for R.N.B., and A. Craig to *Pembroke* for R.N.B.

Surg. Lt.-Comdrs. H. J. McCann to *Victory* for R.N.B., J. A. Cusack to *Dorsetshire*, and A. R. Ewart to *Leander*.

Surg. Lt.-Comdr. (D.) J. M. Park to *Excellent*.

ARMY MEDICAL SERVICES

Col. M. F. Grant, late R.A.M.C., having attained the age for retirement, is placed on ret. pay.

Lt.-Col. D. F. Mackenzie, D.S.O., from R.A.M.C., to be Col. (Col. Donald F. Mackenzie, D.S.O., on medical duty in the Aldershot Command, is 54, and has been in the R.A.M.C. since January, 1907.

ROYAL ARMY MEDICAL CORPS

Maj. A. Jackson to be Lt.-Col.

Capt. (local Maj.) J. C. Gilroy relinquishes the local rank of Maj. on ceasing to be empld. with the Trans-Jordan Frontier Force.

REGULAR ARMY RESERVE OF OFFICERS

Lt.-Col. F. B. Dalgliesh, having attained the age limit of liability to recall, ceases to belong to the Res. of Off.

TERRITORIAL ARMY

H. Dickie (late Offr. Cadet, Glasgow Univ. Contgt. (Inf. Unit), Sen. Div., O.T.C.) to be Lt.

D. R. Hood to be Lt.

Supernumerary for service with O.T.C.—Lt. F. L. Ker, supern. for serv. with Med. Unit, Edinburgh Univ. Contgt., Sen. Div., O.T.C., to be Capt. (Substituted for the notification in the Gazette of March 12th, 1935. *Vide* THE LANCET, March 23rd, p. 704.)

ROYAL AIR FORCE

The undermentioned Flight Lieutenants are promoted to the rank of Squadron Leader: A. F. Cook and E. Thompson.

Flight Lts. P. D. Barling to R.A.F. General Hospital, Hinaidi, Iraq; P. J. McNally to R.A.F. Institute of Pathology and Tropical Medicine, Halton.

INDIAN MEDICAL SERVICE

Lt.-Col. A. F. Hamilton, C.I.E., retires.

Major T. J. L. Thompson, M.C., R.A.M.C., has been appointed as officiating D.A.D.M.S., Eastern Command.

DEATHS IN THE SERVICES

The death occurred on March 25th, suddenly, at sea of Surg. Capt. Sidney Roach, R.N., retired, formerly medical officer of the Royal Naval College and Royal Hospital School at Greenwich. He qualified M.R.C.S. in 1897, having studied at St. Bartholomew's Hospital and took the D.T.M. & H. in 1921. He entered the Navy as a surgeon on May 25th, 1897. He served in the sloop *Alert* on the North American station, and at Bermuda naval hospital, and was promoted to staff surgeon in 1905, in which year he joined H.M.S. *Cambridge* at Devonport. Later he was medical officer of the R.M. garrison at Ascension; of the cruiser *Indefatigable* in the West Indies; and of Chatham Barracks. During the war he was medical officer of the cruisers *Devonshire* and *Roxburgh* and the submarine depôtship *Bonaventure*. Then he served in the *Defiance*, torpedo schoolship at Devonport. In 1923 he entered the service of the Harrison Line, and it was on board one of their vessels that he died. He made his home at Brading, Isle of Wight.

Lt.-Col. Francis George Adye-Curran died at his residence, Esker House, Rathmines, Dublin, on March 15th, at the age of nearly 90. Born in Dublin in December, 1845, and educated at Trinity College, he obtained his M.D. Dub. in 1867, became L.R.C.S.I. in the same year, and F.R.C.S.I. in 1887. Early in life he joined the Army Medical Service and retired in 1893 with the rank of Lieutenant-Colonel. He then engaged in private practice in Rathmines, Co. Dublin, and remained in practice up to his final illness, being probably the oldest medical practitioner in Ireland. During the war he returned to the Army although past 70 years of age at the time, and served for a time in India. Col. Adye-Curran had been for many years a director of the Apothecaries' Hall of Ireland, of which he was for a time governor; he also represented the Apothecaries' Hall on the General Council of Medical Education and Registration from 1905 to 1914.

CITY OF LONDON MATERNITY HOSPITAL.—During the last year 1683 mothers were admitted into this hospital and 210 were delivered in their homes. With the exception of emergency cases sent in by medical officers antenatal supervision and treatment were given where necessary, and postnatal clinic was arranged for the care of the mothers when they left the hospital. The improvements which have been carried out during the year include the erection of a new operating theatre with adjoining sterilising room, but the hospital requires another £1000 a year if it is not to fall into debt.

KETTERING GENERAL HOSPITAL.—The increase in the year's work at this hospital is the largest in the last seven years, for the total number of cases, 25,588, exceeds those of 1933 by almost 7000, and is about double the number recorded for 1928. There was an excess of income over expenditure amounting to £383. The total amount received from the hospital guild weekly contribution scheme was £7331, which was a record. The £10,000 appeal towards the cost of alterations and extensions is progressing satisfactorily. The daily average number of occupied beds was 76·25 as compared with 65·78 last year, and the average cost per patient (excluding out-patients) was £9 10*s.* 7¼*d.*, a decrease of 1*s.* 3½*d.* on the previous year.

PARLIAMENTARY INTELLIGENCE

OSTEOPATHS BILL

Select Committee's Inquiry

(*Continued from p. 784*)

THE Committee's inquiry continued on Friday, March 29th, and Monday, April 1st, with Lord AMULREE in the chair.

Sir William Jowitt Presents his Case

Sir W. JOWITT, K.C., principal counsel for the British Medical Association, addressed the Committee on their behalf. He said that the number of people in this country practising osteopathy and calling themselves osteopaths was estimated at between 2,000 or 3,000. Among them was a select body numbering 179 who stood in a somewhat different category. The hypothesis upon which the Bill was put forward was this: the unqualified osteopaths were doing some public harm, and it was therefore desirable that the present state of affairs should be brought to an end. The 179 qualified osteopaths were divided into two categories. Some 96 of that number were "old boys" of the British School of Osteopathy, and the other 83 had some American qualification. Of the 83, as far as the evidence went, roughly half were Americans and on the evidence American medical degrees were not accepted in this country. The proposal of the Bill was that all persons practising osteopathy to-day should come on to a register, subject to the point which Lord Elibank and the promoters would consider later as to how far subsection (iii) of Clause 6 (1) would involve examination.

WHERE THE BILL BREAKS DOWN

There might be occasions where it was necessary or desirable that the State should put upon a register persons who were not qualified, in spite of the manifest disadvantages of such a course. There might be compelling reasons such as those which operated in the cases of the dentists and the veterinary surgeons. The most important reason was the certainty that after the register had been set up everyone who went on the register would have to be properly and adequately qualified, there being in existence all the necessary schools and methods of teaching to secure that result. But was it certain that a corresponding advantage would be secured in the case of the osteopaths? Was it certain that from the moment the register was established everyone who practised osteopathy would be properly trained and properly qualified, so that the danger to the public which existed to-day would disappear? From that point of view he thought that the present Bill broke down altogether. The promoters were putting the cart before the horse. The Minister of Health had said that the first thing for the osteopaths to do was to get a proper school, and to set up a proper system of training. If they had done so they could have come before their lordships and said that they had a great deal of public support; they had a suitable school and hospital, and could claim that their system of education was comparable to that of the medical curriculum. In such circumstances their Lordships might have said that they would permit a little wrong by putting unqualified people on to the register for the sake of the great good that would thereafter be achieved. But what would actually happen under this Bill? Dr. Kelman Macdonald had stated that there was no reputable school of osteopathy in this country except the British School of Osteopathy. He (counsel) did not want to say much about this school, or about its dean, Dr. Littlejohn, but one thing at least was plain: it could not be regarded as in any way satisfactory, nor did he regard it as reputable. Dr. Littlejohn, he would say quite plainly, was not an honest man, and if there was to be a satisfactory educational system for osteopaths in the future, the less he had to do with it the better. If, on the other hand, there were more people like Dr. Macdonald, and it was possible to get some of them to give their time and attention to the school and develop a hospital in connexion with it, then he could imagine that their Lordships might approach this Bill from a different point of view. It was significant that Dr. Macdonald and his Association had never recognised the students of the British School of Osteopathy, and he hoped they never would. But in those circumstances to come to Parliament and ask the State to recognise that which Dr. Macdonald would not recognise, knowing that the only prospect of osteopaths being educated in the future was through the British School of Osteopathy, was to ask something which was quite impossible.

No one doubted that there were many cases in which osteopathy was very valuable, but the claim put forward in the Bill was a very wide claim. Parliament was asked to allow people to be put on the register to treat all diseases. Not one single witness had been called who treated acute diseases. There was no evidence that any osteopath in England treated acute diseases. Mr. Streeter and Dr. Macdonald had what they described as office practice. If they were going to say that the State recognised osteopaths as fit to treat these diseases, why should they hesitate to say that they should be able to sign death certificates? The reason why a medical man could treat diseases better than a layman was because he knew something about diagnosis.

NON-SECTARIAN TRAINING

The function of education, continued Sir William, was to enable a man to think for himself, and it was a mistake to start the student from a prejudiced point of view by indicating to him that he was never going to use drugs. The doctor had both a professional and a financial interest in getting a reputation for curing his patients, and if this osteopathic theory was right, why did the doctors not accept it? They understood it. The young men coming from the universities and medical schools to-day were in a position to judge. The right solution was to let these people take their medical degrees, and afterwards carry on their researches in any way that they liked, as they were perfectly entitled to do; the British Medical Association would deplore any ostracism of a man like Dr. Kelman Macdonald. The Bill if passed, Sir William concluded, might do a grave public injury by duplicating machinery and setting up a second register. Wherever this happened the tendency was for the lower qualification to be taken, and at a time when medical education ought to be improving they would deliver it a blow and send it backward.

Sir Henry Brackenbury's Evidence

Sir HENRY BRACKENBURY, vice-president of the B.M.A. and a member of the General Medical Council, next gave evidence. Examined by Sir WILLIAM JOWITT, he said there was now a movement by the Council to place the whole of general biology in the pre-medical stage, so that the real five years' education would begin after the student had taken physics, chemistry and biology. Replying to the CHAIRMAN, he said that from the time of the ordinary matriculation examination it took a student two years to prepare for the five years' medical course.

COUNSEL: There is plenty of scope for a man to continue to learn after his name has been placed on the Register?—WITNESS: He must do that, otherwise he will be not merely a scientific failure, but a financial failure too.

COUNSEL: A man like Dr. Kelman Macdonald can practise osteopathy?—WITNESS: He can practise anything he likes.

COLLABORATION WITH OSTEOPATHS

COUNSEL: Would you have the slightest hesitation in consulting or using a man like Dr. Kelman Macdonald?—WITNESS: No; not in the least.

Lord ELIBANK: Does that apply to all your profession?

—WITNESS: There would be no feeling against consulting Dr. Macdonald because he was practising as an osteopath. That is to say, being on the Medical Register there could be no question about the appropriateness of any medical practitioner consulting him if he wished to do so. There is this distinction against general consultation with a person on the Medical Register who is practising osteopathy, as there is with persons who are practising homœopathy—that if I wish a consultation with a colleague the value of that consultation is likely to be less if I know beforehand that he has adopted a fixed and restricted method of looking at things.

Later Lord ELIBANK asked: Have you yourself ever used an osteopath or invited the coöperation of an osteopath in any of your cases?—WITNESS: Probably in the sense in which you mean it, no. I have had a number of patients who have expressed a desire to see an osteopath about certain conditions and I have never placed the slightest obstacle in their way.

Lord ELIBANK: You have not advised them not to go?—WITNESS: Never.

Replying to a question about Dr. Macdonald's complaint of his difficulty in obtaining an autogenous vaccine in Edinburgh, Sir Henry Brackenbury said: "In that case Dr. Macdonald was treated very badly, and in a way he should not have been treated." No medical man was obliged to associate himself with or consult with any other medical man if he did not wish to do so, but if the conduct complained of had been brought before the British Medical Association they would have said to the person concerned, "You acted very impolitely and very improperly."

Lord ELIBANK asked why Dr. Axham was struck off the Register for acting as anæsthetist to an osteopath, when at the present day a doctor could coöperate with an osteopath without coming to any harm.

The Witness, after explaining that Dr. Macdonald was a registered medical practitioner, pointed out that what the General Medical Council was anxious to do was to prevent "covering." If, habitually, a registered medical practitioner helped an unqualified and unregistered practitioner to carry on his practice by just coming in to help him to do those things which the State said must only be done by a registered medical practitioner, then he was liable to be called up and judged for an offence. The offence was that of enabling an unqualified person to carry on his practice as though he were a registered person.

Continuing his evidence the witness mentioned that there were a number of general practitioners who practised manipulative surgery in the colliery areas. Replying to Lord ELIBANK, he said that these practitioners learned manipulative surgery in the medical schools, but their skill in the art developed with the experience they had in daily practice.

Lord ELIBANK: Is the subject in the curriculum of the medical schools?—WITNESS: It is compulsory. It has been emphasised very much since the General Medical Council made its last revision of the medical curriculum in 1926. Since then the emphasis placed on the teaching of manipulative surgery has been very much increased.

The witness went on to speak of the great difficulty of differentiating between major and minor surgery, and said that if any attempt was made to bring in a class of persons who might practice minor surgery, but not major surgery, it would be necessary to have a tribunal constantly sitting to say whether a man had or had not exceeded the powers given to him. Speaking of the wide general knowledge required for making a correct diagnosis, he said that the diagnosis spoken of did not seem to cover the same thing in the two cases. It seemed to him, as he had listened to the evidence, that the osteopath's diagnosis was merely directed to the location of a special osteopathic lesion. The osteopath's point was not whether a person had bronchitis, or pneumonia, or gall-stones, or appendicitis, but whether the basic cause of his disease was in the second or seventh dorsal vertebra. The doctor's diagnosis might or might not have something to do with the spinal column, but it was directed to form an exact a picture as possible as to what was going on in the patient's body.

A VOLUNTARY REGISTER.

The witness referred to the Chartered Society of Masseurs as having a voluntary register which was widely recognised both by the profession and the public. This was a very good example of a voluntary register. A registered masseur or a masseuse could not treat a patient without going through a doctor. That was because massage otherwise might be entirely misdirected. Masseurs did not regard themselves as competent to diagnose cases in which massage was the correct treatment. When a skilled person had decided that massage was the right form of treatment, then the masseur was the right person to give that treatment.

THE AMERICAN PARALLEL

In answer to further questions by COUNSEL, the witness said that if the situation were the same as it is in the United States the B.M.A. would withdraw its opposition; the Bill would be a necessary thing. In the U.S.A. no one was allowed to practise the healing art unless he was on a register recognised by the State. The English system, on the other hand, was to have one recognised minimum qualification, and allow anybody else to practise as they pleased. He thought there were probably 25,000 unregistered persons in this country who in some form or at some time were in fact practising. But in these circumstances State recognition involved the picking out from among all the cults one or more for registration.

"It seems to me," said Sir Henry, "that we must either have a British system of complete liberty for the public and for those who wish to practise any healing art—with State recognition on one minimum qualification only—or we must adopt fully and completely the American system of prohibiting the practice of healing by anyone who is not on a State register. Then you must have a number of State registers in order that the public may be able to exercise their choice . . . As soon as under that system the State recognises one or more forms of healing it is bound, I think, to place those forms of healing at the disposal of the public in any State arrangements that it makes for dealing with public health . . . The chaos—I do not think I am putting it too high—that would be caused in public health administration by the recognition of more than one register under the English system would be so great as to be almost impossible."

The WITNESS then described the position in the United States and Canada as he had studied it on a visit to those countries. In the U.S.A. there were 142,000 trained medical practitioners and 36,000 others, namely, 7680 osteopaths, 16,000 chiropractors, 2500 naturopaths and 10,000 Christian Scientists. These figures were taken from the report of a committee partly governmental and partly representing the American Medical Association. There were a bewildering number of differences between the arrangements made in the various States. Thus, 8 States of the Union gave osteopaths a limited right to use certain drugs, whereas in 17 they might not use drugs without special licences for individual cases.

COUNSEL then referred the witness to a publication, No. 16 of the Committee on the Costs of Medical Care, by Louis S. Reed, Ph.D., in which the following passage occurred: "In point of numbers the growth of osteopathy has practically stopped. The failure to grow is probably due for the most part to two things—chiropractics and evolution of osteopathy." The report, the witness said, was published a year or just over a year ago. As the result of investigations from year to year regarding the number of osteopaths practising in the United States, it was shown that for the last few years they had been to all intents and purposes stationary.

Lord ESHER: Have you deduced anything from the decline of osteopathy in the United States?—WITNESS: The best osteopaths have approached so near to the medical standard that those who wish to go in for that form of healing take the whole medical course rather than take something which costs them nearly as much and takes nearly as long, whilst they find themselves having taken the full Medical Course with a greater status . . . . . With regard to those who are not so scientific and earnest—and I think I include the majority—the tendency has been rather to go over wholesale to the chiropractors' field, because they can do the thing much more cheaply in a shorter time, and they can hold out all sorts of wild promises of cure which the best of the osteopaths would not feel themselves able to do.

DIFFICULTIES IN THIS COUNTRY

Sir W. JOWITT, having resumed his questioning on the attitude of the B.M.A., the witness said that if they were to consider the economics of the proposed registration, he would say that the medical profession would probably benefit from it rather than otherwise. The opposition was not influenced by any feeling that the Bill was going to harm the medical profession.

COUNSEL: You do not oppose as such the compilation of a register?—WITNESS: Not at all. It would be useful and would enable the public to distinguish between those who had a training and those who had not.

The witness added that a State recognition involved something in this country which was quite different from the existing State register in the United States. We had to start here with the knowledge that anybody may practise healing without doing anything illegal at all, provided he did not pretend to be a registered medical practitioner. There was no necessity here for a register, for a State recognition in order to supply a public demand. On the other hand, if the State chose to pick out one or more particular cults for State recognition, that involved in this country a responsibility and consequences which were quite different from the necessary registration of the various schools of thought in America. It involved the giving of a cachet or authority to theories and beliefs which were unaccepted by almost the whole scientific world. There was a very considerable section of the public who thought that the stamp on patent medicines was a State guarantee that the medicine would do all that was claimed for it.

In answer to Counsel's questions, the witness said that, as far as the increasing recognition of the importance of manipulation and the increasing recognition of the limitation of drugs were concerned, he would like to give the osteopaths every credit for having emphasised those points. They were not new points, because the evils of indiscriminate drugging, and the value of surgical manipulation had been acknowledged and practised in medicine before the time of Still.

COUNSEL: You pay a high tribute to manipulative surgery, but it is to the extent of the claims that the osteopaths are making that you now raise your objection?—WITNESS: Yes, entirely. They are asking recognition over the whole field of medicine.

State recognition, he added, would involve the use of registered persons for State purposes—for poor law, national insurance, infantile welfare and school-children.

Lord ESHER: There would be no objection to that if the basic principle of osteopathy was true?—WITNESS: If the basic principle was true there would be no other register but the osteopathic register, as the Medical Register would be wiped out.

A QUESTION OF BIAS

The Witness said the four years' osteopath's course would compare with a six years' medical course, or the five years' course would correspond with a seven years' medical course. From the beginning, moreover, there was a bias in the minds of the students.

CHAIRMAN: Is not the medical education biased?—WITNESS: No. It is unbiased in so far as it teaches the basic facts of the science of medicine. You can say that those who conceive the world to be round are biased as against those who believe the world to be flat, but I do not think you can take the belief that the world is round to be a biased belief.

Lord ESHER: That is only because you believe it to be true.

The witness did not think that the establishment of an osteopathic register could profitably lead to personal collaboration in general between osteopaths and registered medical practitioners. Indeed, the effect would be all the other way. He would know, as a medical man, that any one whose name was on the osteopath's register had had from the beginning a biased education, and had established in his mind certain fixed ideas.

Lord ELIBANK: Have you no fixed ideas on medical science or treatment?—WITNESS: No, except in the sense that if a fact seems to be established I should accept it for the whole or almost the whole of the scientific world. I should hold it to be the right of any man on the Medical Register to take any view he likes.

Lord ELIBANK: You say there is no probability of collaboration between the osteopath and the medical profession under this Bill, and you say the osteopaths are doing good work in the community?—WITNESS: A number of them in a limited field.

Lord ELIBANK: Can you help the promoters of the Bill by telling me how we can bring about that collaboration which I want and from what I gather you want too?—WITNESS: In my belief this Bill will not lead in that direction but in the opposite direction. At present I, as a medical man, have my liberty without transgressing any medical law or rule of the General Medical Council to consult with and use any one in the world that I can with reference to the welfare of my patients, so that there is nothing to prevent any collaboration between myself and an osteopath or anybody else.

Sir Henry Brackenbury Cross-examined

Mr. MURPHY, counsel for the promoters of the Bill, questioned Sir HENRY BRACKENBURY about the authenticity of the figures relating to the United States which had been spoken to by the witness. Sir Henry said he did not think that there was Government responsibility for the publication which had been quoted but the Government had representatives on the Committee. Council suggested that the book was simply a publication of an individual member of the Committee expressing his own views. The witness disagreed. He did not think the author (Dr. Reed) was a member of the Committee, but he took it that in accordance with the procedure indicated the report had been submitted in its final form to each member in order that he might express his dissent for it if he desired to do so. No such dissent was expressed.

COUNSEL: You tell me that, and of course I accept it as your view, but I suggest to you that there is nothing in this publication from beginning to end to show that it has received the approval of the committee.—WITNESS: I have never claimed that it has.

One of the reasons given for a lack of increase in the number of osteopaths in America, Sir Henry agreed, was the rise in osteopathic standards. This rise had been brought about in a number of States according to the writer of the book, by State action. But except in those nine States which had recently enacted Basic Licence Laws, there was no legislation involving the raising of the standard of osteopathic education. The standard education had been raised by the action of the osteopaths themselves.

COUNSEL: Will you take the view that there being a large number of persons practising osteopathy in this country it is highly probable at least that if certain definite standards and qualifications are insisted upon and enforced you might find a smaller number practising osteopathy, but a much better qualified number of persons?—WITNESS: Yes.

COUNSEL: That is not merely highly probable but almost inevitable?—WITNESS: One of the results.

The Witness said the B.M.A. possessed figures which reached the conclusion stated by a witness last week that osteopathy was dying in the country of its birth. The figures indicated a stoppage of the increase. He promised to let the Committee have the figures.

The Witness said he was satisfied to leave things as they were in this country, even at the risk of people resorting to persons who were not qualified. He preferred the English system to the American system. He did not think it was an undue risk to retain the present liberty.

COÖPERATION AND COVERING

On the question of coöperation with osteopaths, Sir Henry reiterated his belief that such coöperation would be futile.

Lord ELIBANK: Dr. Macdonald has medical training and has since become an osteopath. Does that mean that he has adopted a fixed idea, and how can you reconcile what you say about coöperation?—WITNESS: As far as I am concerned that objection would hold with Dr. Macdonald. I can conceive of a number of cases under my responsibility in which I might have Dr. Macdonald to do manipulation, but knowing that Dr. Macdonald has adopted certain fixed ideas this would weigh with me in deciding whether coöperation with Dr. Macdonald would be valuable.

COUNSEL: You have not the same confidence in Dr. Macdonald because he has studied osteopathy?—WITNESS: Dr. Macdonald has a perfect right to adopt any view. He is very likely right and I am very likely wrong, but if I believe that the principles on which he acts are not true that prevents useful coöperation between him and me.

Later COUNSEL said: The osteopath whom you believe to be performing a certain useful function could require somebody occasionally to administer an anæsthetic. If a doctor administers an anæsthetic for an osteopath and complaint is made to the General Medical Council the matter is taken up and that medical man is in considerable jeopardy?—WITNESS: That case has to be dealt with on its merits by the General Medical Council. He is in some jeopardy.

COUNSEL: Although he has only assisted a man in doing something which, having regard to the principles of English liberty, he is perfectly entitled to do?—WITNESS: No; that is not quite right. You must not ask me to prejudge cases which, as a member of the General Medical Council, I may have brought before me . . . . I have no doubt that if a registered medical practitioner accepted a salary from an osteopath to give an anæsthetic for an unregistered osteopath, the liability being habitually to administer anæsthetics, there would be a serious liability that that person would be put off the Register. As things stand at present the medical practitioner who gives an anæsthetic knows that his name may come before the Council and be erased from the Register.

COUNSEL: If an anæsthetic is administered at all it is desirable that it should be done by a medical practitioner?—WITNESS: Fortunately that is one of the theories regarding which the public has shown sense.

COUNSEL: A registered medical practitioner giving an anæsthetic for the purpose of enabling an osteopath to carry out a useful piece of healing may find himself in considerable jeopardy? WITNESS: Yes, but I should like to qualify that. The only reason would be if by so doing he was enabling an osteopath to treat patients as though he were a medical practitioner. If the charge were not proved up to that point he would be in no jeopardy. . . . . .

Lord ELIBANK: If the medical practitioner wants to give anæsthetics regularly he would come within the rule?—WITNESS: He might and he might not. The charge has to be that the registered medical practitioner is assisting an unregistered person to treat patients as though he were a registered medical practitioner. It depends on the Council whether that charge is held to be proved or not.

COUNSEL suggested that, in view of the difficulty of knowing what might be the consequences, the vast majority of medical practitioners would be on the safe side and not administer the anæsthetic for an osteopath. To which the witness replied that the vast majority of medical practitioners never had been and never would be asked to do so.

After questions about the theory underlying the practice of osteopathy, Counsel quoted the witness as saying he would not regard belief in the roundness of the earth as a bias. Assuming for the purpose of the question that the round-earthers were the medical profession and the flat-earthers were the osteopaths, he suggested that it would be unreasonable and useless to ask a flat-earther to spend six or seven years in an educational establishment of round earthers before going to an educational establishment of his own. The witness said that no man with a fixed idea could get it removed unless he had some sort of scientific education.

Further Questions to Sir Henry

Mr. DICKENS (Counsel for the B.M.A.) then put a number of questions. In the course of his replies the witness said he would not hold it improper for him to give an anæsthetic for an unqualified person if the responsibility for the case remained with himself or any other registered practitioner.

TWO STATE REGISTERS

In describing the disadvantages which would attend the setting up of two State registers in this country, the witness instanced the difficulty of establishing a criterion of incapacity for work under National Health Insurance, owing to the fact that there would be two different bodies of people looking at such questions from a different angle. Then, again, if it was claimed that osteopaths by manipulating the spine could prevent or greatly minimise the incidence of puerperal sepsis and eclampsia, it would be a wicked thing to deprive women of the opportunity of having their spine manipulated by osteopaths. That would mean that they would need to establish maternity and child welfare centres not merely for scientific medicine but also for osteopathy. The same would apply to the care of the health of school-children. If it was claimed, as it had been claimed, that the reduction of osteopathic lesions would prevent the incidence of infectious disease in the small child, clearly such children ought to have their spines examined and their osteopathic lesions rectified before going to school, or while at school, in order that the incidence of measles and other infectious diseases might be diminished.

If that was true, and the public desired to have safety in that way, there would have to be an alternative system of medical inspection and treatment provided by the State in every State department of medical activity. It seemed to him also that the local authorities would have to provide one or the other, even if they did not provide both, sets of medical officers of health. It might become a burning question at local municipal elections as to whether they should have disease prevented by the manipulation of the spine or by scientific medical methods.

OSTEOPATHIC THEORY: TRUE OR FALSE

Lord ESHER: You said in your evidence that the osteopathic theory had been repudiated by the scientific world, but Dr. Macdonald said that he had made genuine efforts to get the scientific world to examine the theory. Is it the habit of the scientific world to repudiate evidence that it has not examined?

The witness said he disputed Dr. Macdonald's statement, but he would rather leave that to the scientific witnesses. It seemed to him inconceivable that the anatomists and physiologists who have been working for 100 years investigating the structural and functional states of the body should have failed to observe the osteopathic lesion.

Lord REDESDALE: Medical students are taught to keep an open mind?—Yes.

Is it not the case that the medical profession are aware that to a certain extent they are still groping in the dark?—Yes, in a great many instances.

You are not advancing the inconvenience to the State as an argument against the recognition of a new method for the prevention of disease?—Not if it has been scientifically proved.

CHAIRMAN: Might both theories be true—the medical and the osteopathic theory?—Oh, no.

If the one is true, the other is false?—Yes. I am dealing with the theory of osteopathy.

In certain cases you agree osteopathy does good work, but you take the view that it is limited?—Yes.

What kind of work do you confine it to?—The sphere of manipulative surgery, mainly dislocations or structural abnormalities of the joints.

The witness added that he had found that in most cases where osteopathic treatment was called for it was some trouble of the knee or elbow-joint, and those cases had occasionally been put right. There might be structural abnormalities of the joints of the spine in which manipulative surgery would be the right kind of treatment, but such were not within his own experience.

Protest from Chiropractors

Mr. ST. JOHN RAIKES, counsel for the British Chiropractors' Association, at this stage asked permission to make a statement regarding the evidence of Sir Farquhar Buzzard who quoted from an American book, the statement that chiropractic treatment was an old form of faith cure under a new name. As the chiropractors might be done harm in the eyes of the public by such statements, he wished to say that they took very strong exception to the statement. Chiropractics had nothing to do with faith curing whatever.

Dr. Mennell's Evidence

Dr. JAMES MENNELL, medical officer in charge of the physiotherapy department of St. Thomas's Hospital, London, then gave evidence for the B.M.A. Replying to Mr. Dickens, counsel for the Association, he said he started upon the system of joint manipulation in 1907, and since that time had been gradually elaborating many other manipulative methods of treatment. He had set out the results and the technique in several text-books, one of which, entitled "Backache," had been described to the Committee as an osteopathic text-book. In reviewing the immensely wide field covered by the practice of manipulation, he mentioned incidentally a kind of asthma in which there was reflex irritation of the nerves from spinal trouble, and which could definitely be relieved and even cured by manipulation. Manipulative methods, however, were not of any use in acute diseases, so far as he knew.

COUNSEL: Have you ever had a success which required the pre-supposition of anything like the osteopathic theory?—WITNESS: None.

Upon being reminded that Dr. Macdonald had said that his text-book was inspired by osteopathic teaching, the witness traced his introduction to manipulative treatment to the inspiration of one of the surgeons at St. Thomas's who took him over to Paris. He came home very much interested in work being done there, and he was given the opportunity to investigate at St. Thomas's Hospital, where he held an appointment for two years. Then he began to consider seriously specialising in physical medicine. As a result his first visit to the United States was made in 1919, 12 years after he had began to be interested in the subject. At that time he had never read an osteopathic paper or text-book, or seen any osteopathic work. Yet in 1919 he was invited to address on the subject of manipulation one of the most august medical bodies in the world—the Association of American Surgeons. With regard to text-books, Dr. Mennell admitted that he had read and very carefully studied one which was entitled "Osteopathic Mechanics." That dealt with the mechanical side with practically no theory at all. He had been practising joint manipulation, or manipulation of some sort, for 30 years, and probably he should have been a very easy convert to the osteopathy, but he found it easier to accept the orthodox explanation than the osteopathic explanation. They were asked to investigate and prove the osteopathic theory and the osteopathic treatment. He asked that those two things should be separated. To say that no one had investigated treatment was a little hard on one who had spent 30 years in endeavouring to do that very thing. As to the theory, so far as he could make it out, and as far as his reason would allow him to go, it seemed to him that it must be a creed, and as such it was incapable of scientific investigation. No one could believe it scientifically.

COUNSEL: Supposing the manipulative methods are confined to what you say are their legitimate objects—namely, local troubles—are they a danger unless the practitioner is very highly skilled?—WITNESS: Very great. There are physical dangers. The standard attained must be absolutely the highest.

Asked whether it was necessary for an osteopathic student to study all the subjects studied by a medical student, the witness said that any medical man who wished to practise any specialty had to take an elementary training in all branches of medicine and surgery. His own practice had been confined to physical medicine, but he was truly thankful that he had himself done so; he knew enough to tell his patient when to go to some other practitioner for help. A man who specialised ought to have adequate knowledge to know when he was himself ignorant.

Cross-examination of Dr. Mennell

Mr. THORPE, K.C., leading counsel for the promoters, asked the witness if he thought that qualified osteopaths performed useful service in this country? Dr. Mennell replied that they had helped many of their patients.

COUNSEL: How is it they do good? Is it by accident?—WITNESS: May we take some concrete case. Would you like the case of asthma? There are undoubtedly cases in which the qualified osteopath would bring health, comfort, relief, and possibly cure in suitable cases But if asked to deal with such a case I hope that I should investigate and find out whether it came under the heading of a suitable type for that treatment.

Does it come to this, that there are certain types of cases in which properly qualified osteopaths can bring benefit?—Yes.

And conversely there are certain cases which you could elaborate which they ought not to be allowed to deal with, such as pneumonia and so on?—Yes.

Later COUNSEL asked: What is the fundamental distinction between you and the osteopaths?—WITNESS: I cannot accept that the osteopathic spinal lesion is the most important single factor in the production of disease and the most important curative factor when the disease is attacked.

PASSAGES FROM A PRIVATE LETTER

COUNSEL: There was a time when you thought something of Dr. Andrew Still. Did not you refer to him, writing to one of his pupils, as your great master?—WITNESS: He was a very remarkable, inspiring teacher.

COUNSEL asked if the witness remembered saying: "In my own mind and in my own heart I pay loyal tribute to the great man who first conceived the possibility of applying manipulative treatment to the joints of the spine."

The witness replied in the negative, but when shown the signature of a letter to America dated August 6th, 1931, produced, he admitted that it was his own signature.

COUNSEL: Do I read this aright? You were referring to the orthodox medical people of this country and did you say this: "You mention one of my illustrations and add that this is the only place where apparent credit is carried to osteopathy. This is true, and I am sorry to say, deliberate, in spite of the fact that I know quite well of the truth of your statement that every figure and every

page is a corroboration of the teaching of Dr. Andrew Taylor Still."—WITNESS: I did, but I believe there is nothing in that to imply that I accepted the creed.

COUNSEL: Having said that, you go on: "but you must remember that I was writing in the hopes that I might appeal to the medical men of this country and of the U.S.A. to whom the word 'osteopathy' or 'osteopathic manipulation' is anathema." Is that why you did not pay an open tribute to osteopathy—because it was anathema to medical men in this country?—WITNESS: No. We are against the eternal problem when you connect the manipulation with the creed.

COUNSEL: You go on "For them the very word must be dropped" (that is osteopathy) "and equally for them the teaching of your great master (Dr. Andrew Still) must be doled out in minute doses and in a disguised form, otherwise prejudice will be so great that again the progress we have already made will be set back for another generation." What do you mean by that?—WITNESS: It is the attachment of their treatment to their faith that has already thrown back the whole thing.

COUNSEL (reading): "In my own mind and in my own heart I pay loyal tribute to the great man who first conceived the possibility of applying manipulative treatment to the joints of the spine." Is that true?—WITNESS: Yes.

The witness added he was still willing to pay tribute to Dr. Still as a remarkable man, and a great teacher. Medicine was international in its character.

COUNSEL: You go on to say "I am wise to insist on what one may call the ABC of treatment first before making any attempt to enter into the wider realms."—WITNESS: I suppose I was referring to the wider realms of details.

COUNSEL: Are not the wider realms the theory of osteopathy? Details are not the wider realms?—WITNESS: I think so.

Proceeding, the witness protested that the letter was confidential. COUNSEL quoted further: "I hope that you will consider the views that I have expressed here as confidential, as were they broadcast I am afraid that my first effort to accustom my professional brethren to the idea that manipulative treatment has its useful place would be seriously handicapped."

COUNSEL: You found it difficult to get your brethren to accept manipulation?—WITNESS: In the early stages, but not now.

COUNSEL (again quoting): "So far the great point gained is that I have been able to produce an osteopathic text-book, however rudimentary, which has received appreciative notice in every medical journal."

That, COUNSEL suggested, was meant to bring into the heart of the osteopath to whom the witness had written that someone was blazing the lone trail in this unhappy country. He quoted further: "The attitude that I have always adopted is that orthodox medicine in which I was trained, has a useful and invaluable purpose to serve, but that the less orthodox methods have no less their own sphere of usefulness, and that until the two are combined they will neither of them rise to perfection, and that therefore neither of them will serve their fullest purpose."

The witness said that was his opinion and true belief, that when the osteopath is combined with the medical practitioner we should have a much more valuable article than either of them separately.

Further Questions to Dr. Mennell

Re-examined by Sir WM. JOWITT, counsel for the B.M.A., the witness said that so far as the theory of osteopathy was concerned he could not accept it. If the theory were right manipulative treatment would be the right method of dealing with all diseases, whereas in some diseases it would be extremely dangerous. No medical man was justified in prescribing a treatment unless he had good, solid scientific reasons for prescribing it. Manipulation came under that heading. His work had been to establish manipulative work on a solid foundation.

Lord ELIBANK asked whether if osteopathic manipulation was based on scientific thought and observation it was not entitled to the same recognition as the witness's manipulative treatment received. The witness replied: "Not while attached to a creed which is not susceptible to scientific proof or disproof."

Before the courts adjourned the witness, addressing the Chairman, said he was frankly disturbed about the letter that had been read. It was undoubtedly written in entire confidence to a man who presumably had written to him in very friendly terms. He thought one was privileged in a private and confidential communication to speak with absolute freedom. The CHAIRMAN said he understood, and thanked Dr. Mennell for his assistance.

NOTES ON CURRENT TOPICS

Medical Qualifications in India

IN the House of Commons on March 28th the Government of India Bill was further considered in Committee. Mr. MOLSON moved an amendment to Clause 118 (Professional qualifications in general) with the object of preventing persons with European professional qualifications being disqualified from practising their professions in India. His amendment, he said, sought to do three things. In the first place it sought to restrict the protection to what he might call vested interests by defining more precisely those whom it was intended to protect. Secondly, the amendment extended protection to those who began to engage in a profession during the time that would elapse between the passing of this Bill and the passing of an Act of the Indian Legislature prescribing those qualifications. Thirdly, his amendment sought to make the previous sanction of the Governor necessary before any such new qualifications took effect. Nothing in this amendment was doing anything to force European professional men upon India; it did not endeavour to compel Indians to employ people with European qualifications, but only to prevent people with European qualifications from being disqualified from practising professionally in India.—Sir T. INSKIP (Attorney-General) said that the Government were prepared to accept the first two parts of the amendment, but not the third.

On Clause 119 (Medical qualifications) Sir T. INSKIP moved the first of a series of amendments to restrict the clause to British India, because he explained that the arrangements dealt with concerned only British India, and not the India including the States.—Sir F. FREMANTLE asked if there was no arrangement by which later on this might be extended to Federal India.—Sir S. HOARE replied that they must deal at present with British India. The whole basis of this clause was reciprocity between the medical councils of Great Britain and of India. There was no medical council for the Indian States. There was, however, no reason in the future why the Indian States should not accede to this part of the Act when they so wished, but for the moment they dealt only with the two medical councils.

Paying Patients in Voluntary Hospitals

In the House of Lords, on April 2nd, Lord LUKE moved the second reading of the Voluntary Hospitals (Paying Patients) Bill, which enables hospitals to provide accommodation for pay beds. Such beds, the noble lord said, were not to be provided at the expense of or by reduction in the number of ordinary beds. Patients in the pay-beds would be those whom a hospital almoner would not usually accept in the ordinary wards, but who could not afford the cost of private treatment in their homes and urgently required the assistance of a hospital with all its specialist treatment. Such patients were not the very poor, but the comparatively poor, who had sometimes been called "the black-coated poor." The

provision of pay-beds in recent years had become recognised as a customary part of the function of voluntary hospitals. The *raison d'être* of the Bill was that some hospitals, in order to provide pay-beds, had recently obtained private Acts, and others wishing to do so must adopt the same procedure, which would cost at least £500. The present Bill would provide a uniform method of removing such anomalies, while safeguarding the interests of the sick poor. The Bill embodied the considered views of the King Edward Hospital Fund and the Hospitals Association.

Lord SANDERSON said that the Opposition had certain misgivings about the Bill. They were very anxious that it should not be the means of cutting down the services for poor people who could not afford to pay. They did not want the waiting lists in the hospitals to become longer or to run the risk of hospital treatment being cut short because of the pressure of the waiting list. The Opposition were very dissatisfied with the hospital system, or lack of system, and wanted to see all the hospitals taken over by the municipalities, publicly controlled, and kept open for free treatment for all who needed it. They should be supported out of the rates.

The Earl of DUDLEY, speaking as chairman of one of the large voluntary hospitals in London, supported the Bill. He said he hoped that it would not interfere with the powers of committees of management to charge varying fees in hospitals where they had the power to charge for in-patients. He had heard it said that it was the intention of the Charity Commissioners to issue an order limiting the amount to be charged to seven guineas. That would be a hardship on the lower-paying beds. In the hospital which he controlled they were able to charge as high as ten guineas for single rooms, but if they were to limit their charges to seven guineas they would have to raise the fees of the lower-charged beds, because the ten-guinea beds naturally covered to a large extent the charges made for the beds of lower cost.

Viscount HAILSHAM, Secretary of State for War, said that Lord Luke had made out a case for the desirability of having some beds available for that class of persons who were willing to make some payment towards the necessary expenses of receiving treatment, but were unable to pay the fees of a nursing home. The Government had considered the point made by Lord Sanderson, and had come to the conclusion that it was right to provide pay-bed accommodation, but that safeguards should be insisted on to ensure two things—first, that the property and funds of a hospital settled on it for the benefit of the sick poor were protected and prevented from being diverted for any other purpose; and secondly, that the accommodation which would otherwise be available in the hospital should not be restricted, and that there should be no risk of preventing poor people from having the amount of accommodation which would otherwise be available for them. While the Government would support the second reading of the Bill, they would feel it their duty to move amendments proposing specific safeguards with regard to the funds and property of the hospitals and dealing with other matters. He did not agree with Lord Sanderson's preference for a municipal rather than a voluntary system.

The Bill was read a second time.

Royal Assent

Among the measures which were given the Royal Assent by Commission in the House of Lords on Thursday, March 28th, were the following Acts: Ministry of Health Provisional Order Confirmation (County of Holland Joint Hospital District) Act, 1935; Ministry of Health Provisional Order Confirmation (Guisborough Joint Small-pox Hospital District) Act, 1935; Ministry of Health Provisional Order Confirmation (Huntingdonshire Joint Hospital District) Act, 1935; Ministry of Health Provisional Order Confirmation (South Chilterns Joint Small-pox Hospital District) Act, 1935.

HOUSE OF COMMONS

WEDNESDAY, MARCH 27TH

Medical Men and the Speed Limit

Mr. GLOSSOP asked the Home Secretary if he would instruct the police that doctors on their way to attend urgent cases were not to be prosecuted for exceeding the 30 miles per hour speed limit; and whether the same exemption would be granted to veterinary surgeons.—Sir J. GILMOUR replied: The question whether there should be an exemption from the speed limit in the case of vehicles used by members of the medical profession when attending urgent cases was discussed when the Road Traffic Act, 1934, was passing through Parliament, but it was decided that it would not be practicable to allow this exemption. It would be equally impracticable to place on the police the responsibility for assessing the degree of urgency when considering the question of instituting proceedings, and in my view the only satisfactory solution is to leave the matter to the courts.

THURSDAY, MARCH 28TH

Unemployment Assistance Expenditure

Mr. D. G. SOMERVILLE asked the Minister of Labour the present average weekly expenditure of the Unemployment Assistance Board; and by what amount, if any, this exceeded the anticipated average.—Mr. STANLEY replied: The present expenditure on unemployment assistance allowances is at the rate of about £44,000,000 a year. This accords substantially with the anticipated expenditure, as stated in the Financial Memorandum to the Unemployment Assistance (Temporary Provisions) Act.

Medical Rejections of Police Recruits

Sir WILLIAM JENKINS asked the Home Secretary (1) what was the percentage of men rejected on medical grounds who applied to join the police forces in England and Wales for the years 1932, 1933, and 1934; and (2) what number of applications was received to join the Metropolitan police force in 1933, 1934, and to the latest available date in 1935; what was the percentage of men rejected on medical grounds; and what percentage for causes other than medical.—Sir JOHN GILMOUR replied: The following statement gives the figures relating to the Metropolitan police. I regret that I have not got corresponding information for the county and borough forces.

—	1933.	1934.	Jan. 1st, 1935, to March 23rd, 1935.
Completed application forms received	8027	5893	1373
Rejected as below standard..	70 %	51 %	42 %
Attended for examination ..	1682	2415	724
Rejected on medical grounds	46 %	47 %	54 %
Rejected on other grounds ..	20 %	19 %	16 %

Milk and Infectious Disease

Sir ARNOLD WILSON asked the Minister of Health whether he would draw the attention of medical officers of health to the statement in the report of the cattle diseases committee that the available evidence as to the importance of milk in the spread of infectious disease was not conclusive, and that the number of cases of scarlet fever traced to milk in the last 20 years was only 2500 to 3000 out of some 2,000,000 cases.—Sir HILTON YOUNG replied: No, Sir. Even if it were established that only 2500 to 3000 cases of scarlet fever in the last 20 years were attributable to milk, I should still consider it important that milk should be pasteurised in order to prevent such cases in the future. But, in fact, the Committee on Cattle Diseases considered that infection through milk may be more extensive than appears at first sight, the reason being that it is only where a large number of cases occur that the milk-supply is likely to be suspected. Also, as my hon. friend is aware, scarlet fever is not the only milk-borne disease which can be prevented by pasteurisation.

Sir ARNOLD WILSON asked the Minister of Health whether he would draw the attention of medical officers

of health to the statement, at page 28 of the report of the cattle diseases committee, that the most serious outbreak of disease brought to their notice, involving over 500 deaths, was traced to pasteurised milk infected by a human carrier.—Sir HILTON YOUNG replied: The outbreak in question occurred in Canada, and I understand that while it was not found possible to determine exactly how the milk became infected, the weight of evidence was to the effect that the infection was introduced before the milk reached the pasteurising depôt, and that much of the milk was distributed without having been submitted to the pasteurising process. I see no reason to call the special attention of medical officers of health to the matter.

Bookings at Maternity Hospitals

Mr. PARKINSON asked the Minister of Health whether, arising out of the Manchester case of Mollie Taylor, in which it was found that the porter of the hospital took all bookings for maternity cases and that these bookings bore no relation to the number of beds available, he would inquire in how many cases this practice of employing a porter obtained, and require that some qualified person, such as a lady almoner, should book the cases in relation to the number of beds available.—Sir HILTON YOUNG replied: Many maternity hospitals are outside my jurisdiction; but I am advised that the method of booking referred to in the first part of the question is quite unusual. My medical officers inquire into the matter at the hospitals which they visit. As the hon. Member is no doubt aware, the published report on Mrs. Taylor's case contained a recommendation that the system of booking at the hospital concerned should be placed under the charge of a responsible officer.

Scarlet Fever at Denham and Iver

Sir FRANCIS FREMANTLE asked the Minister of Health whether he could make a further statement regarding the recent outbreaks of scarlet fever at Denham and Iver, Bucks, the number of cases and deaths involved, the origin of infection, and the administrative conclusions involved, with a view to the prevention of such outbreaks in future.—Sir HILTON YOUNG replied: Up to the present, 90 cases have been reported in which the signs and symptoms were sufficiently well defined to justify a diagnosis of scarlet fever, but there have been, in addition, a large number of mild cases in which the only clinical symptoms were sore-throat, vomiting, or slight fever. There have been two deaths. As regards the origin of the infection, I have nothing to add to the answer given on this subject on the 21st instant. The outbreak confirms the conclusion that it is practically impossible to avoid similar occurrences otherwise than by efficient pasteurisation, or some equally effective form of heat treatment, of the milk-supply.

Maternal Mortality

Captain ELLISTON asked the Minister of Health whether his attention had been drawn to the necessity of special local study of the causal factors of the continuing maternal mortality; and what action he had taken or proposed to take in the matter.—Sir HILTON YOUNG replied: Yes, Sir. Such special study has been continuously in progress in the Ministry of Health. It was the main object of the special committee on maternal mortality appointed by one of my predecessors in 1928. I have myself recently carried the matter further as regards the local aspect by calling for special reports from the medical officers of health in the areas where the incidence is or has been most marked. I have further arranged for thorough local investigation of the problem in those areas and, for purposes of comparison, in other areas, by officers of the Ministry carefully selected for the purpose. I have secured the services of an eminent obstetrician to advise on the reports of those officers. Where immediate specific steps are recommended, I bring the matter to the notice of the authority for action accordingly. When all the reports are available I propose to consider the position as a whole and to lay a White Paper on the subject before the House.

Replying to Sir F. FREMANTLE, Sir HILTON YOUNG said he was afraid that he could not give a date when the White Paper might be expected, because it depended on the completion of intensive local investigations.

The Countess of IVEAGH: Has the right hon. gentleman taken into consideration the possibility of making compulsory a confidential notification of maternal deaths in all areas, as is now done in some areas?

Sir HILTON YOUNG: Certainly that point has been under consideration, but at present the purpose is effectively served by the voluntary information which I get in response to my appeal to the local authorities.

Birmingham Infectious Diseases Hospital

Mr. GROVES asked the Minister of Health whether classified records had been kept regarding illnesses in nurses at the Birmingham City Infectious Diseases Hospital; and, if so, for how many years were they available.—Sir HILTON YOUNG replied: According to information which I have received from the local authority, classified records of the illnesses of nurses in the Birmingham City Infectious Diseases Hospital are available for the years 1932 and 1933, and are set out in the Medical Officer of Health's Annual Reports for those years. Classified records for 1934 are not yet available.

MONDAY, APRIL 2ND

Royal Veterinary College

Sir ALAN MCLEAN asked the Minister of Agriculture whether the recommendations contained in paras. 44 and 45 of the Report of the departmental committee on the reconstruction of the Royal Veterinary College had been given effect to; and if so, to what extent.—Mr. ELLIOT replied: The Governors have accepted in principle the recommendations to which my hon. and gallant friend refers, but action has been deferred until the rebuilding of the college is approaching completion. I understand that they have recently been advised that it will be necessary for them to apply for a new Charter, and that a draft is in course of preparation.

Private Maternity and Nursing-homes

Mr. EDWARD WILLIAMS asked the Minister of Health the number of private maternity and nursing-homes in the country, and the number that were registered and came under local government supervision.—Mr. SHAKESPEARE, Parliamentary Secretary to the Ministry of Health, replied: The administration of the Nursing Homes Registration Act, 1927, is in the hands of the local supervising authorities established under the Act, usually the councils of counties and county boroughs, and the information desired by the hon. Member is not in the possession of my right hon. friend. He would, however, point out that under the Act all private maternity and nursing-homes, with certain specified exceptions, have to be registered by, and are subject to inspection by, the local authority.

Local Authorities' Maternity Hospitals

Mr. EDWARD WILLIAMS asked the Minister of Health the number of deaths to mothers and children, respectively, at maternity hospitals which were administered by local authorities.—Mr. SHAKESPEARE replied: According to the returns received from local authorities in England and Wales for 1933, the numbers of deaths during that year of mothers and children in their maternity hospitals and in the maternity wards of other hospitals and institutions administered by them were as follows: 607 maternal deaths and 2243 deaths of infants within 10 days of birth. Complete figures for 1934 are not yet available.

Nutritional Value of Milk

Mr. COVE asked the Minister of Health whether he was now in a position to give the House any information as to the proposed inquiry into the nutritional value of milk at certain schools and approved centres.—Mr. ELLIOT, Minister of Agriculture, replied: Yes, Sir. The Milk Marketing Board for England and Wales, and the Scottish Milk Marketing Board, have submitted to the Secretary of State for Scotland and myself particulars of certain arrangements for conducting an inquiry into the nutritional value of milk. These arrangements have now been approved for the purpose of Exchequer contributions under Section 11 of the Milk Act, 1934, and in accordance with the provisions of that section have been laid before Parliament and are now available to the House. The

scheme is supplementary to the milk in schools scheme, and it is hoped that the information which will be collected will not only be of great value to those engaged upon nutritional research, and in connection with public health and education services, but will also have an important bearing upon the problem of increasing the demands for liquid milk in this country. As will be seen from the particulars in the White Paper, the inquiry is under the supervision of a representative expert subcommittee of the advisory committee on Milk Publicity of the Milk Marketing Board for England and Wales, and is being conducted by experienced medical officers working in conjunction with school medical officers and teachers. It is on a large scale, covering some 8000 children, and is expected to last for some twelve months.

Sale of "Prepared Honey"

Sir JOSEPH LAMB asked the Minister of Health if his attention had been drawn to the sale of large quantities of a substance described as prepared honey, which was not the pure product of the bee from the nectaries of flowers; and what steps he proposed to take to prevent this misrepresentation of the nature of food as offered and sold to the public.—Sir HILTON YOUNG replied: I am aware that a substance which is not pure honey is being sold under the name of "prepared honey." I have no power to take any action in the matter, but if the circumstance of the sale are such as to constitute an offence under the Food and Drugs (Adulteration) Act, the duty of enforcement rests on the local authorities, and it is open to any person to take proceedings.

Discharge of Mental Patients

Dr. O'DONOVAN asked the Minister of Health if representations had reached his department or the board of control that the requirements of Section 49 of the Lunacy Act, 1890, had been altered within the last 10 years to the detriment of the friends or relatives who desired to secure the discharge of a patient; that previous to that date the two doctors appointed to examine a patient paid one visit each and reported, but now they were required to go together on two visits, thus doubling the cost in fees; and in view of the fact that such an increased cost was prohibitive to the poor he would look into this and see if it was possible to return to the practice previously obtaining.—Sir HILTON YOUNG replied: The requirements of Section 49 of the Lunacy Act, 1890, have not been altered, but some years ago the Board of Control, after careful consideration, expressed the opinion that the section requires that the two medical practitioners should examine the patient together on two separate occasions. Since 1928 the Board have received two representations in the matter. The point has been noted for consideration in the event of amending legislation being introduced.

PANEL AND CONTRACT PRACTICE

Married Women in Industry

IN the *National Insurance Gazette* of March 21st "Secretary" points out that the problem of married women in insurance has not been solved by the recent reduction in their sickness and disablement benefit. Circular 329 IC., which started the controversy, made it clear that married women's claims were more than double actuarial expectation. Lax certification by doctors was partly blamed for this, and eventually the rates of benefit were reduced by an amending Act of Parliament. Now, apparently, claims by men under the Act are less than was expected, whilst claims by women are equal to or more than expectation. The percentage of women claimants (being spinsters and widows) is only slightly higher than that of men, whereas the percentage of married women claimants is three or four times that of men and other women. The expectation of sickness is recognised to be higher for married women than for other insured persons, but it is thought still to be too high. Married women become insured in two ways: (1) as new entrants; (2) continuing insurable employment after marriage. As it has been suggested that many of both classes work only a few hours a week, and that insurance is therefore more profitable than employment, a study was made of 262 applications as new entrants when it was found that:—

6 per cent.	were employed about	1 hour	per day or less.
8 ,, ,,		2 hours	
12 ,, ,,		3 ,,	
20 ,, ,,		4 ,,	
29 ,, ,,		5 ,,	

These figures (which do not relate to Class 2) show that one in every three or four employed married women is engaged in what is virtually a spare-time employment, the remuneration for which may be little more and is sometimes less than sickness benefit. "Secretary" says that it is to a certain extent competent for societies to refuse admission to married women who are employed for less than a minimum number of hours. Many societies do not admit married women at all. This protects the society as far as new entrants are concerned, but not with regard to these continuing insurance after marriage. "Secretary" would like to find some method of weeding out those who are really whole-time housewives with some subsidiary work in insurable occupations; in the certification of such cases the doctor should, he thinks, take into consideration the hours of work at their employment. "Secretary" does not mention, as he might have done, that healthy married women who go out charing often evade insurance altogether. If their employers connive at this infringement of regulations and are not found out, the contribution for these healthy women are not forthcoming to help to pay benefit for the less robust chars, who immediately insist on being insured because they so frequently need it. This goes to swell the percentage of married women's claims.

Drugs and Appliances

Section 10 (2) of the National Health Insurance Act, 1924, provides that "medical treatment and attendance" includes the provision of proper and sufficient medicines, including such chemical reagents as may be prescribed, and of the prescribed medical and surgical appliances. Probably no aspect of the Act has caused more misunderstanding than the question what may or may not be prescribed as part of medical benefit. It is sometimes suggested that insurance practitioners are not permitted freely to order medicines which are not included in the National Formulary, but reference to the introduction to the volume itself will reassure the doubter that the Formulary in no way affects the right of a medical practitioner to order such proper and sufficient medicines for his patients as the terms of his agreement with the insurance committee require. Any practitioner may write extemporaneous prescriptions independently of the Formulary or of the Drug Tariff, although he should bear in mind that the chemists' fund is limited, and therefore combine efficiency and economy. Insurance practitioners are advised not to order proprietary preparations unless they have satisfied themselves that the therapeutic effect aimed at cannot be obtained by the use of non-proprietary remedies. A list of what are regarded as efficient substitutes for a number of proprietary preparations is incorporated in the National Formulary, and a practitioner who has prescribed a proprietary

preparation for which a recognised substitute of lower cost is available, and who has failed to give such substitute a trial, may find difficulty, when challenged, in justifying his action.

The London insurance committee, on March 28th, considered a report by their medical benefit subcommittee giving instances of expensive drugs and appliances recently prescribed—quite properly—for insured persons. Scrutiny of the prescriptions received from chemists had satisfied the subcommittee that practitioners are not unmindful of their duty to prescribe proper and sufficient medicines for insured persons. Inquiries have often to be addressed to manufacturers asking for prices and particulars of new remedies prescribed for insured persons, the introduction of which is so recent that they have not yet been included in the makers' latest lists.

Fees Charged to Insured Persons

During a period of two months thirteen applications were made to the medical benefit subcommittee in a large urban area for the withdrawal of accounts rendered by practitioners or the refund of fees, paid in respect of medical treatment provided for insured persons. Action was taken as follows:—

In one case the account was cancelled as the insured person's name was included in the practitioner's list, and the account had been rendered in error.

In two cases the amounts were refunded as the insured persons were entitled to receive treatment as insured persons.

In three cases no action was taken, as the insured persons' names appeared in the lists of neighbouring practitioners, and the necessary transfers had not taken place.

In three cases no action was taken as application was not made within the specified time—viz., one month from the date of the presentation by the practitioners of the accounts, and in two of the cases treatment was provided in a private capacity.

In one case the account was withdrawn, the practitioner providing treatment as deputy for a neighbouring practitioner.

In the remaining three cases no action was taken as treatment was provided in a private capacity.

PUBLIC HEALTH

Flat-foot in School-children

NOT long ago Mr. Blundell Bankart pointed out to the Medical Society of London that a flat-foot is not in itself a deformity, nor a malady, nor indeed any disability whatever; it is the natural attitude of the foot in relaxation. The arched condition of the sole of the foot is an attitude or posture determined by muscular action, and maintained only so long as the muscles are in action. The so-called arch of the foot—which anatomists for centuries have taught is the normal condition, and which orthopædic surgeons have been at such pains to preserve—is a contracture deformity almost universally acquired as the result of cramping the foot in a shoe. If this is so, the wearing of sandals and plimsolls should preserve the natural mobility of the child's foot by permitting it to flatten when the weight of the body is on it.

Officers of the school medical service should have the best chance of verifying this. Recently a number of assistant medical officers in Kent were asked to report on the relation of flat-foot to the wearing of what are now called plimsolls. Do these heelless rubber shoes cause any pathological condition of flat-foot? Dr. C. Campbell agrees with Mr. Bankart that the arch of the foot is maintained not by ligaments but by muscles; a pathological condition exists only when the muscles become so fatigued that postural reflex activity is exhausted. He divides the flat-foot of school life into two types—(1) supple, where loss of function is negligible; (2) rigid, with considerable loss of function; but he does not give the proportion of his types. In a school where plimsolls are worn he found flat-foot (undefined) to be slightly commoner than in other schools where they are not worn, but he regards them as harmless to normal feet if the children are not required to stand in them for long periods at a time. Where however there is any predisposition, e.g., weak ankles, poor muscular tone, bad posture in standing and walking, wearing plimsolls will accelerate the development of flat-foot. Dr. W. Lessey and Dr. J. Selfe can find no evidence that the wearing of plimsolls is a cause of flat-foot, but Dr. Gladys Stableforth gives tables which suggest that the proportion of flat-footed children is much higher in schools where plimsolls or sandals are worn; it was 25 per cent. in one school where plimsolls were worn all day. Obviously the wearing of plimsolls makes it easier to spot the feet which lose their arch when the weight of the body is on them, but Dr. Stableforth had other criteria than this. But neither in her figures nor in Dr. Campbell's is there any exact evidence that they were dealing with a pathological condition. On the other hand, most boots and shoes restrict the movement of the feet, and the resulting loss of suppleness must tend to the acquirement of the real disability of foot strain.

But however unconvincing may be the evidence of disability due to the wearing of such simple footgear, flat-foot is not uncommon in schools, and the suggestions for treatment made in this combined report have their value. Dr. Campbell remarks that many cases occur during adolescence, the majority of which could have been prevented by measures taken at school to correct faulty habits and develop weak muscles. Dr. Stableforth blames a faulty stance. Few children, she says, know the correct way of walking or standing; many of them turn the toes out and allow the weight to fall on the inner border of the foot, putting an enormous strain on the arch. Walking, as distinct from marching, is not, it seems, included in the curriculum for gymnastic instruction. But it is encouraging to see that the foot is receiving increased attention from physical training instructors in coöperation with the medical officers and at the remedial exercise clinics under the guidance of orthopædic surgeons.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED MARCH 23RD, 1935

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 0; scarlet fever, 2708; diphtheria, 1517; enteric fever, 22; acute pneumonia (primary or influenzal), 1690; puerperal fever, 56; puerperal pyrexia, 157; cerebro-spinal fever, 22; acute poliomyelitis, 3; encephalitis lethargica, 4; dysentery, 13; ophthalmia neonatorum, 94. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on March 30th was 3863, which included: Scarlet fever, 1120; diphtheria, 1717; measles, 11; whooping-cough, 312; puerperal fever, 26 mothers (plus 10 babies); encephalitis lethargica, 269; poliomyelitis, 1. At St. Margaret's Hospital there were 22 babies (plus 10 mothers) with ophthalmia neonatorum.

Deaths.—In 121 great towns, including London, there was no death from small-pox, 2 (0) from enteric fever, 20 (1) from measles, 4 (1) from scarlet fever,

(*Continued at foot of opposite page*)

CORRESPONDENCE

MYASTHENIA GRAVIS

To the Editor of THE LANCET

SIR,—I have been engaged during the past month in investigating the feasibility of the oral administration of Prostigmin for the treatment of myasthenia gravis over long periods. I was therefore much interested to read Dr. Denny-Brown's letter in your last issue. The result which he obtained in his patient by giving orally tinct. belladonnæ ℥ xx. followed by physostigmine salicylate gr. 1/6 was most encouraging. The action was comparable in degree and duration to that of a hypodermic injection of prostigmin (2 mg.). No unpleasant effects were noticed apart from some weakness of the pulse and general faintness during the first two hours.

I have had an opportunity of testing this method on three cases of myasthenia whose reactions to prostigmin by injection have been repeatedly investigated by myself and found to be very nearly constant. The result which I obtained with the oral administration of physostigmine has been so different from the one described by Dr. Denny-Brown that it is obvious that individual patients may show marked tolerance or, on the other hand, great susceptibility when this drug is exhibited. I feel that my results might be helpful to any of your readers who are at present engaged in the treatment of cases of myasthenia.

CASE 1.—Tinct. belladonnæ ℥ xv. in water, followed fifteen minutes later by physostigmine salicylate gr. 1/10. Half an hour later the patient showed some improvement and about the same time complained of eructations and epigastric discomfort. The improvement lasted about an hour. The same patient, after an injection of prostigmin 0·5 mg., experiences a greater improvement lasting two and a half hours. No discomfort is felt although no atropine is given.

CASE 2.—This case also responds favourably to prostigmin 0·5 mg., without atropine. Very limited ocular movements are restored to a full range. The grasp increases from 2 lb. to 14 or 15 lb. She received tinct. belladonnæ ℥ xx. followed in fifteen minutes by physostigmine salicyate gr. 1/8. No improvement occurred. On the other hand she complained of epigastric pain, a feeling of coldness, and she vomited an hour and a half after taking the drug.

CASE 3.—After an injection of prostigmin 0·5 mg., this case shows a diminution of ptosis, and an improvement in the grasp from 5 lb. to 18–20 lb. The effect lasts about two hours. She was given tinct. belladonnæ ℥ xx., followed in fifteen minutes by physostigmine salicylate gr. 1/8. No subjective or objective improvement was noticed. She was cold and shivery for about two hours, she complained of epigastric pain and nausea, and at one time members of the nursing staff were alarmed at her condition as her pulse was barely palpable.

In view of my experience I feel that caution is necessary when using physostigmine, especially as the cases recorded here received smaller doses than the ones used by Dr. Denny-Brown, and showed signs of intolerance to such an extent that the desired improvement was not obtainable.

I am, Sir, yours faithfully,

L. P. E. LAURENT.

University College Hospital, W.C., April 1st.

To the Editor of THE LANCET

SIR,—It does not detract from the importance of Dr. M. Walker's discovery of Prostigmin in the treatment of myasthenia gravis to recall that American observers have for some years reported equally good results by amino-acid therapy. To take one example from the numerous reports in the American literature, Boothby (Jour. Amer. Med. Assoc., 1934, xxi., 1599) says:—

"In a series of 46 cases of myasthenia gravis treated with glycine and usually also with ephedrine, all but two responded favourably; 13 patients are walking, 8 greatly benefited and doing light work, 15 are moderately improved, and 3 have just started treatment."

On theoretical grounds there might be some justification for combining prostigmin and glycine therapy, since the glycine might, by providing the creatine necessary for muscular contraction, avoid the danger of "flogging a tired horse" to which Dr. Denny-Brown refers in his letter in your last issue.

I am, Sir, yours faithfully,

DOUGLAS HUBBLE.

Derby, April 1st.

PROGNOSIS IN PULMONARY TUBERCULOSIS

To the Editor of THE LANCET

SIR,—In Dr. Vere Pearson's article on Prognosis in Pulmonary Tuberculosis (March 23rd) I was pleased to observe the following passage: "The calling of which the patient has experience is generally the easiest and most lucrative and should not be lightly abandoned." It is surprising how frequently one encounters tuberculous patients who have been advised to give up a quiet sedentary occupation with a living wage in exchange for "an open-air job" (no practical details suggested). Too often the town-dweller visualises country life as an idyllic existence "midst sun-kissed cornfields and pleasant orchards." A slushy farmyard at 5 A.M. in February is a different picture—but must needs be faced. Farming to-day often offers but a lean livelihood to the experienced man born and bred in the country; what are the prospects for a weakly tuberculous ex-clerk with a wife and family to support?

I am, Sir, yours faithfully,

T. WARWICK PRESTON.

Queen Anne-street, W., March 27th.

THE PSYCHONEUROSES

To the Editor of THE LANCET

SIR,—I must agree with your leading article that the study demanded for the diploma of psychological medicine, and even for the doctorate in psychological medicine, is of little value in the actual conduct of analytical therapy. The knowledge demanded for the diploma is related to psychotherapy in much the same way as anatomy is related to surgery, and to

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(Continued from previous page)

30 (5) from whooping-cough, 61 (6) from diphtheria, 49 (8) from diarrhœa and enteritis under two years, and 175 (24) from influenza. The figures in parentheses are those for London itself.

There has been a further substantial rise in the number of deaths attributed to influenza, the deaths for the last few weeks (working backwards) being 175, 145, 139, 83, 91, 83, 91, 71, 56. This week these deaths were distributed over 65 great towns, Liverpool reporting 19, Stoke-on-Trent 14, Manchester 11, Warrington, Birmingham, Cheltenham, and Cardiff each 4, West Ham, Willesden, Darlington, Rochdale, St. Helens, Sunderland, Derby, and Swansea each 3. Five fatal cases of diphtheria were reported from Birmingham, 4 from Portsmouth, 3 each from Liverpool, Manchester, Sunderland, and Merthyr Tydfil. Hull reported 5 deaths from measles, Wigan 2. The 2 deaths from enteric fever occurred at Hull and Liverpool.

The number of stillbirths notified during the week was 309 (corresponding to a rate of 45 per 1000 total births), including 41 in London.

hold the diploma is no more proof that the diplomate is capable of performing analytical therapy than the possession of skill in anatomy is an indication of capability of performing a surgical operation. The only way in which one can acquire psychotherapeutic skill is either by wide clinical experience working under the guidance of one who has mastered this work or by undergoing a personal analysis.

Your attitude regarding the knowledge of organic neurology appears to me to be indefensible. Surely a sound knowledge of organic neurology is essential unless the psychotherapist is to be a mere ancillary to the neurologist. It opens the whole question of lay analysis which is not desirable as a general rule. It is, however, just as important that the neurologist should have sufficient knowledge of the psychoneuroses. A short time ago I was surprised to hear an eminent neurologist label an obvious anxiety-neurotic as a "congenital psychasthenic" for whom nothing could be done except the provision of the traditional bottle of bromide.

It seems a pity that it is not possible to provide an additional diploma to the two already bestowed by London University. The present two varieties are for special knowledge in psychiatry and for special knowledge in mental deficiency. The third type would be for special knowledge in psychotherapy, and those wishing to acquire this diploma would have to give evidence of really having performed analyses and undergone training in analytical technique.

It appears to me that Dr. Henry Wilson is correct in deploring the fact that medical superintendents of mental hospitals have been given control of clinics for psychotherapy. The work of the mental hospital medical officer is mainly administrative and most mental hospital medical officers know little of the technique of psychotherapeutic work. His suggestion of the establishment of part-time posts is in my opinion an excellent one.

I am, Sir, yours faithfully,

March 30th. CLIFFORD ALLEN.

DETECTION OF LEAD POISONING

To the Editor of THE LANCET

SIR,—I have read with interest your leading article on the Detection of Lead Poisoning in THE LANCET of March 2nd. "A Thirty-Minute Spectrographic Micro-Method for the Detection of Pathological Lead in Peripheral Blood," on which you comment, was developed by Scott and myself for its practical value in expediting the diagnosis of lead poisoning rather than for purely scientific value. There are certain statements in your comment which convince me that we failed to make ourselves clear in our article. You say, "The authors claim that a positive result 'indicates lead poisoning, or an early stage of convalescence from it'; but consideration of the results obtained by R. A. Kehoe et al. throws some doubt on the justification for this conclusion." With reference to the level of lead in the blood of a group of medical students, which corresponded to 0·06 mg. per 100 c.cm. of blood, it is further stated, "This amount is equivalent to 0·06 γ in 0·1 c.cm., and it is noteworthy that its presence would give a positive result in the test for lead encephalopathy devised by Blumberg and Scott."

A "positive result," in the sense in which we used the term, is not the detection of lead, but the detection of pathological lead, and is defined as the result in which "the sensitive lead line at 2833·07 Angstrom units would appear visible to the eye, and the minor lines at 2802·09 A.U. and 2614·20 A.U. could be seen with the aid of a lens." Thus, 0·05 mg. per 100 c.cm. could be detected, but the truly pathological range does not begin until the concentration reaches 0·2 mg. per 100 c.cm. This means, of course, that 0·06 mg. per 100 c.cm. could be *detected*, but would be a non-pathological trace and considered a negative rather than a positive result. Dr. Scott and I have reported, of course, on the occurrence of non-pathological traces of lead in normal blood, and well recognise that the detection of such a trace does not indicate lead poisoning. Our findings in regard to the level of lead in the blood and the appearance of lead poisoning were reported on May 1st, 1934, and have appeared in a preliminary note (Amer. Jour. Dis. Child., 1934, xlviii., 1437). We have just submitted a detailed report for publication, in which the following values have been established from our data:—

Non-pathological	0·005–0·1 mg.	per 100 c.cm.
Pathological borderline	0·1 –0·2 ,,	
Pathological (lead poisoning or convalescence)	0·2 –1·0 ,,	

Our results show that there is no more lead in the blood of normal adults than of the children studied. So far as our own results are concerned, the values in children tend to exceed slightly those in adults, presumably due to pica or a previous epidemic of storage battery lead poisoning in Baltimore, but many of the patients seen in Dr. Park's clinic at the Harriet Lane Home are of the poor negro class and may not give representative results.

I am, Sir, yours faithfully,

HAROLD BLUMBERG,
Department of Biochemistry, The Johns Hopkins University, Baltimore.

March 18th.

THE ROYAL VICTORIAN ORDER.—The following promotions and appointments have been made in the Royal Victorian Order, on the occasion of the visit of the Duke of Gloucester to Australia and New Zealand. To be Members of the Fourth Class: Surgeon Commander Alexander William Gunn, M.B., R.N.; Surgeon Lieut.-Commander Lionel Lockwood, M.D., R.A.N.

SEAMEN'S HOSPITAL SOCIETY.—The annual court of governors of this society was held on March 28th at the Mayfair Hotel, with Lord Howe in the chair.

The annual report was presented by Sir Ion Hamilton Benn, who said that the income from patients' payments had gone up, while subscriptions from the public remained about the same and the income from legacies had gone down. The balance sheet showed on the year's working a deficit of £633. There was an increase in expenditure. Some of the branches, had, however, made a good showing, notably Tilbury Hospital, which during the year had reduced the deficit on its working by £1000, and the Hospital for Tropical Diseases, which had been able, mainly through increased receipts on account of services to patients, to convert a deficit of £1500 into a credit balance of some £300. The board of management had made a change for their nursing staff from an affiliated training school to a self-contained training school, which meant that the nurses would receive a more compact training in a shorter time. They were also still hopeful that it might be possible to enlist the assistance of the shipping companies to make the post-graduate courses for ship surgeons an integral part of the curriculum of the Mercantile Marine. In proposing the adoption of the report, Lord Howe made an appeal for £40,000 to build a new hospital with a nurses' home, at the Albert Dock. The Port of London Authority had presented the society with a site and the sum of £25,000. Capt. Euan Wallace seconded the proposal and the report was adopted by the meeting. Vice-Admiral R. M. Colvin and Sir Charles McLeod were elected to the board of management.

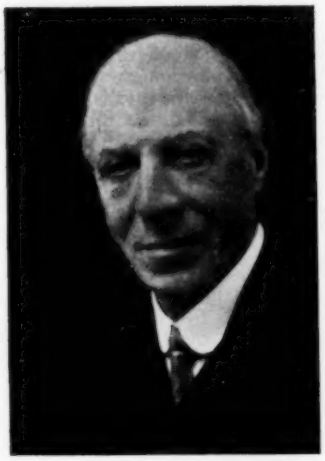
OBITUARY

SIR EDWARD SHARPEY-SCHAFER, F.R.C.P. Edin., F.R.S.

EMERITUS PROFESSOR OF PHYSIOLOGY, UNIVERSITY OF EDINBURGH

WITH the death of Sir Edward Sharpey-Schafer, which occurred at his house in North Berwick on Friday, March 29th, a great figure is lost to scientific medicine. He earned prominence by work in histology performed more than half a century ago, and from that time throughout his long career he remained in the van of physiological research, making fundamental additions to scientific knowledge.

Edward Albert Schafer (known to all the present generation as Sharpey-Schafer) was born in London in 1850, the son of Mr. J. W. Schafer, of Highgate, who had also German connexions. He was educated at Clewer, Windsor, before entering University College, London, where he joined the medical school attached to University College Hospital. He was a pupil of William Sharpey during the last years of that great man's occupancy of the chair of physiology and anatomy at the College. When a studentship at the College was founded in Sharpey's honour, Schafer became in 1872 the first Sharpey scholar, while he was already marked out as showing exceptional promise by the awards of scholarships at London University in zoology, anatomy, and physiology. In 1874, having qualified as M.R.C.S., he became assistant professor of physiology at the College, where Burdon-Sanderson succeeding Sharpey occupied the new Jodrell chair —the first separate chair in physiology to be established in England. Michael Foster was the chief demonstrator. Schafer's earlier work was almost entirely histological, and his publications on the structure of striped muscle-fibres became classical. His first paper dealt with the coagulation temperatures of the blood proteins and he followed this with classical studies on the histology of fat absorption. His position was soon established as a leader of his science; he was one of the founders of the Physiological Society in 1876, and was elected F.R.S. in 1878, an unusually young recipient of the distinction. In 1883 he was elected Jodrell professor, a post which he was to hold for the next 16 years. During this period his contributions to medical science were of the first importance. In 1885 he wrote his well-known text-book, "The Essentials of Histology," which has passed through 13 editions, the latest appearing only last year. The book was a practical expression of words in his introductory address to the students of the medical school in that year, when he regretted the general assumption of those in charge of medical education at the time that anatomy was the foundation on which the whole superstructure of medical and surgical science could be reared. He pointed out that the assumption could only be justified if "the object of medical education were to provide physicians not for the living but for the dead," and his text-book had for its object the supplying to students of the many data necessary for the comprehension of physiological processes. The book in its various editions has endured much revision and has been of the highest practical value to many generations of students. Schafer had already proved the logical necessity of the microscopic study in association with systematic anatomy in the eighth edition of Jones Quain's Anatomy, of which he was a co-editor, and in which the histology of the various structures and organs was displayed.



[*Photograph by Elliott and Fry*

SIR E. SHARPEY-SCHAFER

Schafer now took up work on cortical localisation and on the rhythm of muscular response, publishing his results in 1887 and 1889, while in 1891 appeared researches on ciliary and amœboid structure, followed by those on the structure of the fovea. In work on the heart he was among the first, if not the first, to use methods of photographic record. His invention of the plethysmograph was followed by well-known studies on the contractions of the spleen. In collaboration with George Oliver, he published researches showing the effects produced by the intravenous injection of extracts made from the chromaphil tissue contained in the medulla of the adrenal body, these being pioneer investigations into the activities of the animal extracts. The authors showed that extracts of the suprarenals and the pituitary contained substances which raised the blood pressure, and they must be regarded as the initiators of much of the endocrinology that has followed.

In 1898 he undertook the editorship of the text-book of physiology by British authors, an undertaking which achieved a success quite unusual where the work of many authorities is recorded in collaboration; it became immediately a standard book of reference on physiology throughout the world. This was not surprising considering the band of contributors he was able to secure, among whom were Gowland Hopkins, E. H. Starling, Benjamin Moore, and W. D. Halliburton. Schafer wrote on metabolism and the internal secretions, and supplied an inclusive summary of the enormous subjects. Each of the articles was a complete monograph written out of particular knowledge. To physiologist, pathologist, and physician alike in search of minute fact to support any given theory or opinion the book became an invaluable work of reference.

The second volume of this text-book appeared just after Schafer had accepted, in 1899, the chair of physiology at the University of Edinburgh, and here he returned to work on the tracts of the spinal cord which had held his particular attention some 10 years previously. Afterwards he investigated the intracellular blood canaliculi of liver cells, and published researches on pulmonary blood pressure, on the effects of vagotomy, and on the return of sensory functions in the skin after denervation. Some of his results were verified by experimentation on his own person, the last of them being performed only 10 years ago when he was already an old man. While at Edinburgh, also, he devised his method for the performance of artificial respiration on the apparently drowned, a piece of practical work for the performance of which he is

widely known to the public, and which gained for him the distinguished service medal of the Royal Life Saving Society.

In 1913, the year when he was knighted, Schafer delivered the Lane lectures at Stanford University, California. These were published first in abbreviated form without illustration, but a revised issue which followed, was greatly enhanced in value by the profuse addition of tracings and photographs. The lectures, when published under the title of "The Endocrine Organs," formed a luminous and concise account of the state of knowledge at that date concerning the highly important glands, and the book was re-published in two volumes in 1924 and 1926. It is unnecessary to point out the authoritative nature of a work which is so constantly quoted, and apart from the voluminous and concise nature of its information the critical faculty exercised by the author—his method of dealing with controversial questions—is particularly to be commended. He founded also the *Quarterly Journal of Experimental Physiology* and continued to edit it until his retirement from the chair at Edinburgh, in 1933, when the editorship passed to Prof. I. de B. Daly. On his retirement his assistants published a special volume of this journal in his honour, which the recipient edited himself, while its contents were entirely composed of original researches by the collaborators.

The appointments held by Sir Edward Sharpey-Schafer (the addition to his surname was made in 1918) were numerous and important, and his name must have been known to the public more widely than that of any other physiologist. He was general secretary to the British Association for the Advancement of Science for 5 years from 1895–1900, and president of that body in 1912. For 47 years a fellow of the Royal Society, he received a Royal medal in 1902 and the Copley medal in 1924. He was a medallist of the Royal Society of Edinburgh and was awarded the de Cyon prize of the Academy of Sciences of Bologna. In 1923 he was president of the International Physiological Congress. He was an honorary fellow, associate, or corresponding member of numerous continental and American bodies. The Royal College of Physicians of London gave him the Baly medal, and the sister college of Edinburgh made him an honorary fellow. He received doctorates in medicine, science, or laws from exactly a dozen universities, British, continental, and American, and all who knew the strenuous and valuable nature of the researches thus recognised found that the honours were the due reward of merit. He lived for physiology, and the abiding inspiration of his career was summed up by himself when addressing in Edinburgh an Inter-State Post-Graduate Assembly of North America a few years ago. Speaking of the relationship of physiology to medicine he said that no line of demarcation could be drawn between any of the branches of science associated with medicine. "In one direction physiology borders on pathology, in another on pharmacology, in another on chemistry, in another on physics, in another on general biology both of animals and plants." No one has ever more clearly shown that a branch of science, whatever it may be, cannot be dealt with unless its relationship to other branches is taken into account. To prove the application of this axiom to the relationship between physiology and medicine was his life's work.

Sir Edward Sharpey-Schafer was married twice, first in 1878 to Maude, daughter of Mr. A. W. Dixie, and secondly in 1900 to Ethel, daughter of Mr. J. H. Roberts, F.R.C.S. His widow and a daughter survive, but he endured the tragedy of losing both his sons in the war.

We have received the following tribute from Dr. W. A. Bain, lecturer in physiology at the School of Medicine, Leeds: "As the last of Schafer's pupils to devote himself to full-time teaching and research in physiology, and the last also to have actually worked with him, may I be permitted to pay tribute, however inadequately, to his memory? To most Sharpey-Schafer is known only by his writings; to some thousands he was known as a teacher; to some hundreds as a fellow physiologist; and to a few as a chief and a friend. Of all who came into more or less personal contact with him, the most highly privileged were those who had the honour of working with him or under him, for they could fully appreciate the true greatness of the man.

"Schafer was fortunate in the influences which played on and superimposed themselves on his own brilliant natural gifts, and in him could be plainly discerned the chief characteristics of three of the greatest figures in 19th century physiology; Sharpey, the histologist; Ludwig, the experimentalist, whose very appearance Schafer seemed to acquire; and Michael Foster, the teacher. His first paper was on a histological subject and, as he delighted to recall, was rejected by the Royal Society only to be hurriedly published some time later after a similar paper by the Hertwigs had appeared in a Continental journal and been loudly acclaimed. Schafer's interest in histology was always maintained. He held very strongly to the view that histology should be an integral part of the physiological curriculum, and he never tired of deploring the modern tendency to separate the two subjects and relegate the teaching of histology to the anatomists and the anatomical laboratory. As an experimentalist, even in his latter years, he combined a splendid technical ability with a flair for getting at the essentials of a problem and an almost uncanny genius for assessing the significance of a result. This last faculty was a remarkable thing—incomprehensible in its operation, but generally justified in its results. It sometimes led him to make prophetic utterances, the wisdom of which was demonstrated years later in the natural march of science.

"Schafer's classroom was one of the greatest tributes to the power of his personality. Edinburgh classrooms were never noted for the good order observed in them, and few things could be more dramatic than the sudden transition from the babble of 200 voices to a stillness as of the grave when Schafer appeared at the door of his theatre and made his way slowly, and with characteristic step, to the rostrum. Many a time the one o'clock gun went off as Schafer was talking. In probably any other lecture theatre in the university that would have been the signal for pandemonium, but Schafer was permitted to go on. The admiration of the student for Schafer was mixed with fear, but to those who knew him he was, under the somewhat stern exterior, the kindliest and friendliest of men, with a keen sense of humour and a very charming smile. His memory was marvellous, and many a time his colleagues and pupils have been enthralled as he recounted incidents and anecdotes of many years ago as though they were of yesterday—and there was an incident or an anecdote a propos of almost anything, such was the length and breadth of his experience. And what a joy it was to hear him talk. He had a mastery of the English language, and the beauty and precision of his diction must have been a revelation to everyone who heard

him. Though we shall see and hear him no more, his influence and example will live on, and will continue to be for many of us the principal inspiration of our lives."

THOMAS JEFFERSON FAULDER, M.B., B.Chir. Camb., F.R.C.S. Eng.

THE death occurred on March 20th of Mr. Jefferson Faulder, senior surgeon to the Throat Hospital, Golden-square. He was a distinguished classical scholar as well as an accomplished laryngologist.

Thomas Jefferson Faulder was born at Carlisle in 1871 and received his education at St. Bees School, whence he proceeded to Clare College, Cambridge, in 1889 as senior classical scholar. He obtained a first class in the classical tripos in 1893, and deciding to follow medicine joined the medical school at St. Bartholomew's Hospital, obtaining the Jeaffreson exhibition in 1898, and scholarships with regularity for the next two years, culminating with the Brackenbury scholarship in 1903. In this year he obtained the English double diploma, and in 1904 proceeded to the F.R.C.S. Eng.; in 1905 he graduated as M.B., B.Chir. Cambridge. At St. Bartholomew's Hospital he was house surgeon to the late Harrison Cripps, and for three years acted as junior demonstrator of anatomy. In 1907 he became chief assistant in the throat department of the hospital, a post which he held for six years, during which time he made sound clinical contributions on various aspects of his specialty to *St. Bartholomew's Hospital Journal* and also to the *British Medical Journal*. While engaged in the laryngological work at St. Bartholomew's he was elected to the staff of the Golden-square Hospital and also was appointed surgeon to St. Marylebone General Dispensary, and when the war broke out he was leading a very full professional life. During the war he served with the 92nd Brigade, R.F.A., and received the Territorial Decoration; he later recorded in the *British Medical Journal* some interesting reflections on the relationship between military and occupational diseases. After the war he resumed his duties at his hospitals and practised successfully his specialty of laryngology.

Mr Jefferson Faulder married a daughter of his chief, Mr. Harrison Cripps.

SIR HORACE PINCHING, K.C.M.G., M.R.C.S.

LATE DIRECTOR-GENERAL, PUBLIC HEALTH DEPARTMENT, CAIRO

THE death occurred on March 28th of Sir Horace Pinching at Cairo, where he had for many years resided and where as a distinguished public servant he was well known.

Horace Henderson Pinching was the son of Mr. G. J. Pinching, J.P., of Gravesend, Essex, and was educated at Epsom College and Pembroke College, Oxford. He graduated in arts at Oxford and came for his medical training to St. George's Hospital, took the English double qualification in 1883, and entered immediately the R.A.M.C. He was seconded for service in the Egyptian army in 1888, and six years later was transferred to the public health department of Egypt. He found there much to do, for the public health of Egypt was deplorable, while all efforts at reform met with serious resistance. Cholera constantly made its appearance, and the population was gravely affected also by parasitic diseases and infectious ophthalmia. In carrying into effect measures of reform Pinching distinguished himself by the character of his work, and in 1899 he became Director-General of his department, a post which he held for nine years. He was decorated by the Khedive and was appointed K.C.M.G. shortly before his retirement.

Sir Horace Pinching married in 1903 Ednée, daughter of Mr. Ernest Cramer, of Pressy, Geneva, by whom he had two daughters. He spent the last years of his life in Switzerland.

MEDICAL NEWS

University of Oxford

Dr. R. C. MacKeith has been elected a fellow of University College on the foundation of Dr. John Radcliffe. The Radcliffe prize for the furtherance of medical science in the University has been awarded to Dr. C. L. Cope.

University of London

At recent examinations the following candidates were successful:—

D.M.R.

Part I.—F. M. Abeles, P. A. Flood, Daniel Hugo, E. G. Lynch, Mahendra Mani, Stanley Nowell, and Tek Chand Wasson.

University of Leeds

At recent examinations the following candidates were successful:—

FINAL EXAMINATION FOR M.B., CH.B.

Part I.—G. N. Blackburn, Olive M. Callow, J. C. Coates, Joan M. Coward, W. Davidson, W. G. France, M. Headlam, W. Hobson, K. K. Hussain, R. L. Lamming, D. M. Leiberman, D. J. McCandlish, S. Mattison, W. S. A. Oakes, R. Petticrew, G. Quayle, S. H. Samuel, Winnie Shaw, C. E. Stuart, and C. W. Ward.

Part II.—Mary Barraclough, T. M. Boyle, Julia M. Brown, D. F. Cameron, G. A. Collinson, W. G. L. Flather, Irene Haslegrave, E. H. Kitching, E. F. Lai, H. T. Levi, A. E. Penn, F. Reid, H. Silman, H. E. Steward, and C. C. N. Vass.

Part III.—E. H. Kitching (First-class Honours), G. A. Collinson (Second-class Honours), Mary Barraclough, T. M. Boyle, Julia M. Brown, D. F. Cameron, W. G. L. Flather, Irene Haslegrave, E. F. Lai, H. T. Levi, A. E. Penn, L. Rabinovitch, F. Reid, H. R. Rollin, H. Silman, H. E. Steward, D. Thackray, and C. C. N. Vass.

L.D.S.

K. S. Armstrong-Lamb, T. Stirling, T. H. H. Wilson, and T. J. Wood.

British College of Obstetricians and Gynæcologists

The following candidates have been awarded the diploma of the College after examination:—

A. K. Acharya, Annie F. Allport, W. N. Brown, Helen R. Buck, Dora Davies, Muriel H. Deem, S. K. Hutton, C. N. Jeffries, Mary K. Lawlor, Barbara H. Mitchell, James Morrissey, E. B. Murrell, J. L. Parker, Helen I. Robertson, Isabella Taylor, and S. W. Wright.

University of Liverpool

Among those who will receive the honorary degree of LL.D. at the graduation ceremonies of the University on May 24th are Prof. Arthur Harden, F.R.S., formerly director of the biochemical department of the Lister Institute, and Mr. C. Thurstan Holland, F.R.C.S., formerly lecturer in radiology at the University and president of the first International Congress of Radiology.

University of Manchester

Applications are invited for a travelling research scholarship in medicine and for pathological scholarship. Candidates must be graduates of the university who have taken the full course of clinical instruction at the Manchester Royal Infirmary. Further details may be had from the secretary of the infirmary, to whom applications should be sent not later than May 4th.

Post-graduate Course at Freiburg

A medical post-graduate course is being held at Freiburg from July 1st to 23rd, at which members of the medical faculty will give lectures. Opportunity will be given for members of the course to take part in the work of the various clinics. The secretary of the course is Prof. C. Noeggerath, Kinderklinik der Universität, Freiburg i. B. Mathildenstr. 1.

London Foot Hospital

Lord Dawson will distribute the prizes to students of chiropody at this hospital on Tuesday, April 16th, at 2.30 P.M., in Trinity Church Hall, Great Portland-street, London, W. The hospital is at 33, Fitzroy-square, W.

Hunterian Society

The 115th annual general meeting of this society will be held on Monday, April 8th, at Simpson's Restaurant, Cheapside, at 7.15 P.M. The business of the meeting will begin after dinner at about 8.30 P.M., and will be followed by a short talk on snakes and their bites by Lieut.-Colonel R. H. Elliot, F.R.C.S.

Paddington Medical Society

The annual supper of this society will be held on Thursday, May 16th, at 9 P.M., at Vallero's Restaurant, 25, Chapel-street, Edgware-road, London, N.W. The guests will include Mr. J. C. Gilbert, clerk of the London Insurance Committee, and Dr. C. M. Wilson, Dean of St. Mary's Hospital medical school. The hon. secretary may be addressed at 81, Elgin-avenue, London, W.9.

Midland Mental Pathological Society

The second general meeting of this society was held on March 28th. Dr. D. L. Woodhouse read a paper on the chemical composition of the brain, and Dr. J. H. Quastel one on brain enzymes. The secretary of the society is Dr. F. A. Pickworth, Hollymoor, Northfield, Birmingham.

Medical Society of Individual Psychology

A meeting of this society will be held at 11, Chandos-street, London, W., on Thursday, April 11th, at 8.30 P.M., when Dr. M. S. Thomson will discuss the psychological aspect of skin disease. On May 2nd there will be a special meeting at the same time and place, at which Dr. Adler, the president of the society, will speak on individual psychology in general practice.

The Study of the Voice

Ten lectures on the physiology and the pathology of the vocal chords will be given from May 20th to 25th, at the Hospital Bellan, 7, Rue du Texel, Paris, under the supervision of Dr. Jean Tarneaud, laryngologist to the hospital and to the Conservatoire National de Musique. Further information may be had from Dr. Tarneaud, whose address is 27, Avenue de la Grande Armée, Paris XVI.

Committee against Malnutrition

A public meeting will be held at the Conway Hall, Red Lion-square, London, W.C., on Thursday, May 16th, at 8 P.M., to consider the health and nutrition of women and children in this country. Prof. V. H. Mottram will take the chair, and the speakers will include Miss Eleanor Rathbone, M.P., Dr. Janet Vaughan, Prof. J. R. Marrack, and Mr. N. J. T. M. Needham, Sc.D. Tickets for the meeting can be obtained from the hon. secretary of the committee, 19c, Eagle-street, London, W.C.1.

Eradication of the Bed-bug

At the request of the Ministry of Health, the Medical Research Council have undertaken to promote further investigations into the health problem caused by the infestation of houses by the bed-bug, and have appointed the following special committee to advise and assist them in this work: Prof. J. C. G. Ledingham, F.R.C.P., F.R.S., director of the Lister Institute (chairman); Dr. P. A. Buxton, director of the department of entomology, London School of Hygiene and Tropical Medicine; Mr. C. S. Elton, director of the bureau of animal population, University of Oxford; Mr. C. R. Kerwood, of the Ministry of Health; Dr. John Macmillan, medical officer of health for Woolwich; Dr. G. W. Monier-Williams, of the Ministry of Health; Prof. J. W. Munro, D.Sc., of the Imperial College of Science; Dr. P. G. Stock, of the Ministry of Health; Mr. R. E. Stradling, D.Sc., director of building research; and Mr. A. W. McKenny Hughes, of the Natural History Museum (Secretary). On the recommendation of this committee, grants have been made by the Council for research under the direction of Prof. Buxton into the natural history of the bed-bug with reference to the conditions of its viability, and for research under the direction of Prof. Munro into chemical methods for its destruction.

Central London Throat, Nose, and Ear Hospital

A course in anatomy and physiology will be held at this hospital from April 29th to May 11th and a clinical course from May 13th to 25th. The programme may be had from the secretary of the hospital, Gray's Inn-road, W.C.1.

R.N. Medical Club

The annual dinner will be held on Friday, April 26th, at the Trocadero Restaurant, Piccadilly-circus. Particulars may be obtained from the hon. secretary, Surg. Comdr. F. C. Wright, R.N., Medical Department, Admiralty, S.W.1.

Course on Homœopathy in Berlin

The Berlin Academy for Post-graduate Medical Training is organising an international introductory course on homœopathy, to be held from April 29th to May 17th. It is stated that "drugs will be tested on healthy persons," and that those joining the course will be afforded facilities for attending the out-patient practice of the Association of Homœopathic Physicians and of the University Polyclinic. Detailed programmes may be had from the bureau of the Berliner Akademie für ärztliche Fortbildung, 7, Robert Koch Platz (Kaiserin Friedrich-Haus), Berlin, N.W.7.

Royal Northern Hospital

The annual council of governors of the Royal Northern Group of Hospitals, London, was held on March 28th. Lord Northampton, as chairman of the board of management, submitting the annual report for the year 1934, stated that the number of in-patients had been 6320 against 6014 in 1933, and that the out-patient attendances numbered 360,703 against 338,102 in 1933, and in the casualty department 17,112 patients were received, and casualty attendances had risen from 46,211 to 53,112, while the X ray department had dealt with 15,209 attendances. The board had rearranged the work of this department into two sections—diagnostic and therapeutic. The former will shortly be completed, but until it is financially possible to install a new deep therapy apparatus at a cost of nearly £3000, and to build an extension costing about £4000, the therapeutic side will have to be delayed. The light department had dealt with 8005 attendances, the pathological department had made 15,710 investigations, and the massage and electrotherapeutic section had dealt with 37,873 attendances.—Mr. H. J. Tennant submitted the accounts in the absence of Sir Philip Sassoon. He said that the total income for the past year was £127,667, and that maintenance expenditure amounted to £116,283.

Medical Diary

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MONDAY, April 8th.

United Services. 4.30 P.M. Annual General Meeting. Surgeon Captain S. F. Dudley: Some Atmospheric Hazards of Naval Life.

TUESDAY.

Psychiatry. 8.30 P.M. Dr. J. R. Rees: The Problems of Out-patient Clinics for Psychoneurotics.

THURSDAY.—8.30 P.M. Reception by the President and Mrs. Robert Hutchison. 9.15 P.M. Mr. Robb Lawson: The Embryology and Anatomy of Mickey Mouse. A clinical demonstration will follow.

FRIDAY.

Clinical. 5.30 P.M. (Cases at 4.30 P.M.) Prof. F. S. Langmead and Mr. A. Dickson Wright: 1. Pituitary Adamantinoma with Signs of Pituitary Insufficiency. Dr. Maurice Shaw: 2. Simmonds's Disease (Pituitary Cachexia).

Radiology. 8.15 P.M. Discussion: Radiological Problems and Mistakes. Opener: Dr. J. F. Bromley: Other speakers: Dr. C. G. Teall, Dr. G. B. Batten, Dr. L. A. Rowden, Dr. R. M. Beath, Dr. S. Cochrane Shanks, and Dr. J. Duncan White.

PADDINGTON MEDICAL SOCIETY.

TUESDAY, April 9th.—9 P.M. (Great Western Royal Hotel, Paddington, W.). Dr. W. Brander: Some Problems Connected with Municipal Hospitals.

WEST KENT MEDICO-CHIRURGICAL SOCIETY.

FRIDAY, April 12th.—8.45 P.M. (Miller General Hospital, S.E.). Mr. C. A. Joll, Dr. H. V. Morlock, Dr. H. Pritchard, and Dr. R. C. B. Ledlie: That Surgery is the Method of Election for the Treatment of Peptic Ulcers.

BRITISH INSTITUTE OF RADIOLOGY, 32, Welbeck-street, W.
THURSDAY, April 11th.—8 P.M., Mr. Stanford Cade: Radiation Treatment of Carcinoma of the Lungs.

HUNTERIAN SOCIETY.
MONDAY, April 8th.—8.30 P.M. (Simpson's Restaurant, Cheapside), Annual General Meeting. Lieut.-Col. R. H. Elliot: Snakes and their Bites.

LONDON JEWISH HOSPITAL SOCIETY, Stepney-green, E.
THURSDAY, April 11th.—3.30 P.M., clinical meeting.

SOUTH-WEST LONDON MEDICAL SOCIETY.
WEDNESDAY, April 10th.—9 P.M. (Bolingbroke Hospital, Bolingbroke-grove, S.W.), Dr. G. E. S. Ward: The Failing Heart.

SOCIETY FOR THE STUDY OF INEBRIETY.
TUESDAY, April 9th.—4 P.M. (11, Chandos-street, W.), Dr. E. W. Adams: What is Addiction?

MEDICAL SOCIETY OF INDIVIDUAL PSYCHOLOGY.
THURSDAY, April 11th.—8.30 P.M., Dr. M. S. Thomson: The Psychological Aspect of Skin Disease.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.
MONDAY, April 8th, to Saturday, April 13th.—INFANTS HOSPITAL, Vincent-square, W. Afternoon course in infants' diseases.—ROYAL EYE HOSPITAL, St. George's-circus, S.E. Afternoon course in ophthalmology.—ST. MARK'S HOSPITAL, City-road, E.C. All-day course in proctology.—Courses are open only to members and associates of the Fellowship.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.
MONDAY, April 8th.—Noon, Dr. D. Nabarro: Septicæmia. There will be out-patient clinics every day at 10 A.M. and ward visits (except on Wednesday) at 2 P.M.

CANCER HOSPITAL (FREE), Fulham-road, S.W.
THURSDAY, April 11th.—4 P.M., Prof. J. M. W. Morison: The Treatment of Cancer by Radiations.

PRINCESS BEATRICE HOSPITAL, Richmond-road, S.W.
THURSDAY, April 11th.—9 P.M., Mr. A. Lawrence Abel: The Acute Abdomen.

TUBERCULOSIS ASSOCIATION.
THURSDAY, April 11th, to SATURDAY.—Annual Meeting will take place in Oxford.

GENERAL INFIRMARY, Leeds.
TUESDAY, April 9th.—3.30 P.M., Dr. Towers: Demonstration of cardiological cases.

LEEDS PUBLIC DISPENSARY AND HOSPITAL.
WEDNESDAY, April 10th.—4 P.M., Mr. L. N. Pyrah: Hæmaturia and its Significance.

ROYAL INFIRMARY, Manchester.
TUESDAY, April 9th.—4.15 P.M., Mr. John Morley: Clinical Aspects of Diverticulitis of the Intestinal Tract.
FRIDAY.—4.15 P.M., Mr. G. Jefferson: Demonstration of neurosurgical cases.

ANCOATS HOSPITAL, Manchester.
THURSDAY, April 11th.—4.15 P.M., Mr. P. G. McEvedy: Rectal Pain.

UNIVERSITY OF BIRMINGHAM.
TUESDAY, April 9th.—3.30 P.M. (General Hospital), Mr. G. P. Mills: Demonstration of surgical cases.
FRIDAY.—3.30 P.M. (Queen's Hospital), Mr. Douglas Marsh: Demonstration of cases.

GLASGOW POST-GRADUATE ASSOCIATION.
WEDNESDAY, April 10th.—4.15 P.M. (Lock Hospital), Dr. David Watson: Venereal Diseases (Female).

Vacancies

For further information refer to the advertisement columns

Aberdeen Royal Hospital for Sick Children.—Hon. Asst. Surgeon to Ear, Nose, and Throat Dept.
Aberdeen Royal Infirmary.—Hon. Asst. Phys. Also Hon. Jun. Asst. Surg. to Ear, Nose, and Throat Dept.
Ashton-under-Lyne District Infirmary.—Two H.S.'s. Each at rate of £150.
Birmingham, Erdington House.—Jun. Asst. M.O.'s. Each at rate of £200.
Bolingbroke Hospital, Wandsworth Common, S.W.—H.P. At rate of £120.
Burnley Municipal General Hospital.—Jun. Res. M.O. £150.
Burnley, Victoria Hospital.—H.S. and H.P. Each at rate of £150.
Buxton Clinic for Rheumatism and Allied Diseases.—H.P. At rate of £150.
Cancer Hospital, Fulham-road, S.W.—Second Asst. Path. £250.
Central London Throat, Nose and Ear Hospital, Gray's Inn-road, W.C.—Hon. 3rd Asst. to Out-patient Dept.
Chester, East Lancashire Tuberculosis Colony, Barrowmore Hall.—H.P. At rate of £150.
Chesterfield and North Derbyshire Royal Hospital.—H.S. At rate of £150.
Chester Royal Infirmary.—H.S. £150.
Chichester, Gralingwell Mental Hospital.—Third Asst. M.O. £350.
Connaught Hospital, Walthamstow, E.—Cas. O. At rate of £100.
Coventry and Warwickshire Hospital.—Res. Cas. O. £125.
Derbyshire C.C.—Asst. Maternity and Child Welfare M.O. £600.
Derbyshire Royal Infirmary.—Cas. O. and Orthopædic H.S. £150.
Dewsbury and District General Infirmary.—H.S. £150.
Doncaster Royal Infirmary.—H.S. Also Cas. H.S. Each at rate of £175.
Dorchester, Dorset County Hospital.—H.S. At rate of £160.
Dover Royal Victoria Hospital.—Res. M.O. £180.
Dulwich Hospital, East Dulwich-grove, S.E.—Asst. M.O. £250.
Edinburgh City.—Depute M.O.H. £900.
Exeter, Royal Devon and Exeter Hospital.—H.S. At rate of £150.
Harrogate, Royal Bath Hospital.—Res. M.O. At rate of £156.
Ilford Borough.—Asst. M.O.H. £600.
Inverness District Mental Hospital.—Asst. M.O. (Pathologist). £400.
Inverness, Royal Northern Infirmary.—H.S. At rate of £100.
Ipswich, East Suffolk and Ipswich Hospital.—H.S. to Asst. Surgeons. £120.
Italian Hospital, Queen-square, W.C.—H.S. At rate of £100
Kettering and District General Hospital.—Res. M.O. At rate of £200.
Kingston and District Hospital.—Res. Asst. M.O. At rate of £250.
Lambeth Hospital, Brook-street, S.E.—Asst. M.O. £250.
Leicester City.—M.O.H. £1400.
Liphook, Hants, King George's Sanatorium.—Asst. M.O. At rate of £200.
Liverpool Heart Hospital.—H.P. At rate of £100.
London Homœopathic Hospital, Great Ormond-street, W.C.—Surgeon. Also Asst. Surgeon. Also Two Res. M.O.'s. Each £100.
London Hospital, E.—Paterson Research Scholar in Cardiac Dept. £400.
London Jewish Hospital, Stepney Green, E.—Res. M.O. and H.P. At rate of £150. Also H.S. and Cas. O. Each at rate of £100.
Lowestoft Borough.—Consultant Obstetrician. 3 gns. each consultation.
Manchester, Ancoats Hospital.—Res. M.O. At rate of £150.
Manchester, Withington Hospital Institution and Crumpsall Hospital Institution.—Jun. Asst. M.O.'s. Each at rate of £200.
Margate, Royal Sea Bathing Hospital.—H.S. At rate of £200.
Metropolitan Hospital, Kingsland-road, E.—Sen. H.P. and H.S. Jun. H.P. and H.S. Also Cas. O. Each at rate of £100.
National Hospital for Diseases of the Heart, Westmoreland-street, W.—Res. M.O. Also Out-Patient M.O. At rate of £150 and £125 respectively.
National Hospital, Queen-square, W.C.—Res. M.O. £200. Also Hon. Surg. Asst., Asst. Surg., Asst. Phys., and Anæsthetist.
National Temperance Hospital, Hampstead-road, N.W.—Surg. Reg. 40 gns.
Newark General Hospital.—Res. H.S. £175.
Newcastle-upon-Tyne Royal Victoria Infirmary.—Sen. Accident Room H.S. £150.
Norwich, Norfolk and Norwich Hospital.—H.S. £120.
Nottingham General Hospital.—Second Cas. O. At rate of £200.
Preston, Sharoe Green Hospital.—Sen. Asst. Res. M.O. At rate of £150.
Princess Beatrice Hospital, Earl's Court, S.W.—Two Hon. Anæsthetists. Also Hon. Clinical Assts.
Queen Mary's Hospital for the East End, Stratford, E.—Director of Pathology and Lyle Research Scholar. £750.
Queen's Hospital for Children, Hackney-road, E.—Asst. Phys.
Reading, Royal Berkshire Hospital.—Hon. Surgeon. Also H.P., H.S., H.S. to Ophth. and Ear, Nose, and Throat Beds Depts. Also Cas. O. Each at rate of £125.
Royal College of Surgeons of England.—Examiners.
Royal Masonic Hospital, Ravenscourt Park, W.—Res. Surg. O. At rate of £250.
St. Andrew's Hospital, Devons-road, E.—Asst. M.O. £250.
St. Bartholomew's Hospital, E.C.—Chief Asst. to X ray Diagnostic Dept.
St. John's Hospital, Lewisham, S.E.—Res. M.O. £200. Also Two Res. H.P.'s and Cas. O.'s. Each at rate of £100.
St. Leonard's Hospital, Hoxton-street, E.—Res. Med. Supt. £1000.
St. Mary Islington Hospital, Highgate Hill, N.—Asst. M.O. £250.
St. Mary's Hospital, W.—Med. Reg. (two vacancies). £200.
St. Neots, Three Counties Hospital.—Med. Supt. £1000.
St. Nicholas Hospital, Plumstead, S.E.—Asst. M.O. £350.
Sheffield, Jessop Hospital for Women.—Res. M.O. At rate of £150. Also H.S. and Res. Anæsthetist. At rate of £100.
Sheffield Royal Infirmary.—Asst. Aural and Ophth. H.S. At rate of £80.
Southend-on-Sea General Hospital.—H.P. and Cas. O. Each at rate of £100.
Sutton and Cheam Hospital.—Sen. Res. M.O. At rate of £150.
Swanley Hospital Convalescent Home, Parkwood.—Res. M.O. At rate of £200.
Truro, Royal Cornwall Infirmary.—H.S. £170.
Violet Melchett Infant Welfare Centre, Wellington-street, S.W.—Asst. M.O. At rate of £100.
Weston-super-Mare General Hospital.—Res. H.S. £150.
West London Hospital, Hammersmith, W.—Hon. Asst. Anæsthetists.
West Riding of Yorkshire County Council.—School Med. Inspector. £500.
West Suffolk County Council.—Asst. County M.O., and Asst. School M.O. £500.
Willesden General Hospital, Harlesden-road, N.W.—Hon. Anæsthetist. Also Hon. Physio-therapeutist.
Woolwich and District War Memorial Hospital, Shooter's Hill, S.E.—Hon. Laryngologist. Also Surg. Reg. £100.
Worksop, Victoria Hospital.—H.S. At rate of £160.

The Chief Inspector of Factories announces vacant appointments for Certifying Factory Surgeons at Wivenhoe, Essex; Stromness, Orkney; Twickenham, Middlesex; Stonehaven, Kincardine; and Turriff, Aberdeenshire.

NOTES, COMMENTS, AND ABSTRACTS

WOMEN WHO EARN

"Careers and Openings for Women" [1] is described as "a guide for girls and young women in settling the choice of a career." A more apt description would have been "A treatise on social life, more especially for the guidance of parents and their daughters." Part I. is a survey of women's employment, and Part II. a discussion of careers and prospects conveniently subdivided into chapters on prospects for girls leaving school respectively at 14, 16, 18, and over 18, for university graduates, and for exceptional girls. In the first three chapters of Part I. clear statements are to be found on the need for women to work, the opportunity for women to work, and the difficulties of women's work. Parents should realise, even if their daughters do not, that to-day most young women have to seek work. One woman in every five must expect to continue to work all through her adult life whether she marries or not. The other four will normally marry and then either toil as hard, or harder, than before without defined payment, or will find themselves with leisure as well as responsibility. In the chapter on the difficulties of women's work, a sympathetic picture is given of the unmarried woman with family claims who has "ceased to be young." It is noted with satisfaction that the medical profession does not observe the custom of paying women less than men, and that the prejudice against women in this work has been largely overcome save in the matter of hospital appointments. The three useful appendices contain (1) a summary of the openings and trainings for women arranged in alphabetical order; (2) professional societies and trade unions; (3) an account of the Women's Employment Federation. A bibliography of seven pages is appended, and the index is a good one. In the paragraph on medicine as a career in Appendix 1, the length of training is set out as 5 to 6 years; this is somewhat optimistic, 5½ years being the extreme lower limit. Had the list of professional societies and trade unions in Appendix 2 been complete with the addresses of the bodies mentioned, the book would be even more valuable than it is.

PHYSICAL EDUCATION

A PRACTICAL summary of physical re-education covers all the important aspects of the subject.[2] Miss Rathbone begins with a review, clearly and simply illustrated, of the anatomy and mechanics of joint action and the physiology of the neuro-muscular system. Faulty development due to pain, overwork, infection, and trauma is next dealt with. Then comes the chief section on reconstructive physical education. Exercises are classified according to their effects: general; on joints; for muscle tone; for group muscles. The exercises are well chosen, but the line illustrations are almost too minute to be of much assistance. Some orthopædic lesions are then mentioned, and the book ends with the treatment of mental maladjustments and some school problems.

The section on mental work is well reasoned, and this aspect could with advantage arouse more interest in this country. The idea that mental disease is often accompanied by physical symptoms (and can be helped to a certain extent by the treatment of these as regards circulation, relief of muscular tension, and so forth) is sound, and where experiments to this end have been made here they have yielded good results. The author's rational insistence that the gymnast need not know all about the case, but should treat it from a fresh and purely physical angle, is also sound. Masseuses who have worked in mental homes often complain that they have not the doctor's advantage of psychological knowledge. They forget that they have their own domain, and that to approach the patient as a physical, not a psychological, helper often simplifies the situation. The chapter on school problems reveals a sensible understanding mind, combining a good observation with a sound knowledge of life.

[1] By Ray Strachey. Faber and Faber. 1935. Pp. 271. 7s. 6d.
[2] Corrective Physical Education. By Josephine Longworthy Rathbone, M.A., Instructor in Physical Education, Columbia University. London: W. B. Saunders Co. Ltd. 1934. Pp. 292. 12s.

ERGOTOCIN.—Dr. H. W. Dudley and Dr. Chassar Moir point out that the isolation in crystalline form of a pure active principle derived from ergot by American workers, to which we drew attention last week (p. 758), was recorded only as a footnote to their paper. It is not therefore this crystalline substance, but a less pure product, which is referred to in their article as being made in large quantities by the Eli Lilly Company under the name of ergotocin.

Appointments

BACH, F. J., D.M. Oxon., has been appointed Hon. Consulting Cardiologist to the Charterhouse Rheumatism Clinic.
BANHAM, A. R., M.B. Camb., F.R.C.S. Eng., Hon. Assistant Surgeon to the Northampton General Hospital.
BROOKS, W. D. W., B.M. Oxon., M.R.C.P. Lond., Physician in Charge of Out-patients at St. Mary's Hospital, London.
CALTHROP, G. T., M.D., D.P.H., D.M.R.E., Additional Hon. Radiologist to the Princess Beatrice Hospital, London.
DENNY-BROWN, D. E., M.B. N.Z., D. Phil. Oxon., M.R.C.P. Lond., Assistant Physician to the National Hospital, Queen-square, London.
DONALD, CHARLES, Ch.M. Aberd., F.R.C.S. Eng., Hon. Surgeon to the Hospital for Sick Children, Great Ormond-street, London.
FICKLING, B. W., M.R.C.S. Eng., L.D.S., Hon. Assistant Dental Surgeon to the Royal Dental Hospital of London.
FREWER, E. G., M.B. Camb., Resident Medical Officer to the City of London Maternity Hospital.
JENKINS, J. A., M.B. Glasg., Medical Superintendent of the District Mental Hospital, Larbert.
KELLEHER, W. H., M.D. Irel., D.P.H., Deputy Medical Superintendent (Grade II.), at the Southern Hospital, L.C.C.
LEE, R. O., M.B. Camb., F.R.C.S. Eng., Hon. Surgeon to the Northampton General Hospital.
LIGHTWOOD, REGINALD, M.D., M.R.C.P. Lond., Hon. Physician to the Hospital for Sick Children, Great Ormond-street, London.
MANDERSON, H. D., M.B. Glasg., Medical Registrar to the Out-patient Department at the Manchester Royal Infirmary.
PUNCH, A. LISLE, M.B., M.R.C.P. Lond., Physician to the Hospital for Consumption, Brompton.
SCOTT, GORDON, M.R.C.S. Eng., Assistant Resident Medical Officer to the City of London Maternity Hospital.
SEARS, W. G., M.D., M.R.C.P. Lond., Deputy Medical Superintendent (Grade II.), at the St. Charles' Hospital, L.C.C.

Manchester Northern Hospital.—The following appointments are announced:—
DON, C. S. D., M.D. Aberd., M.R.C.P. Lond., Hon. Physician;
DONALD, H. R., B.M. Oxon., M.R.C.P. Lond., Hon. Physician;
GUTHRIE, SYLVIA, M.D. Manch., M.R.C.P. Lond., Hon. Assistant Physician for Children;
HOLT, R. L., M.B. Manch., F.R.C.S. Eng., Hon. Assistant Surgeon;
WATKINS, K. H., M.S. Lond., F.R.C.S. Eng., Hon. Assistant Surgeon;
GERRARD, E. A., M.D. Victoria, M.C.O.G., Hon. Assistant Gynæcological Surgeon; and
ARCHER, G. E., M.B. Manch., D.L.O., F.R.C.S. Edin., Hon. Aurist and Laryngologist.

Certifying Surgeons under the Factory and Workshop Acts: Dr. W. E. LOCK (Desborough, Northants); and Dr. R. A. FAWCUS (Chard, Somerset).

Births, Marriages, and Deaths

BIRTHS

ALEXANDER.—On March 24th, at Gillingham, Dorset, the wife of B. W. Alexander, M.R.C.S. Eng., of a daughter.
BANKS.—On March 31st, at 56, Gurney-drive, Hampstead Garden Suburb, to Mary, wife of A. Leslie Banks, M.D.—a son.

MARRIAGES

HILLABY—COLLINS.—On March 23rd, at Bournemouth, Hubert Hillaby, M.R.C.S. Eng., Bournemouth, to Mrs. Frances Mary Collins, of Canford Cliffs.

DEATHS

ROACH.—On March 25th, at sea, suddenly, Surgeon-Captain Sidney Roach, M.R.C.S. Eng., R.N. (retired), of Brading, Isle of Wight, aged 61.
WILLIAMS.—On March 25th, at a nursing-home, Alfred Williams, M.D. Glasg., Sussex-square, Brighton, late of Pendleton, aged 73.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.